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How are social networks associated with mental health service use? A comparison between Pakistani women, and women of other ethnic groups in the United Kingdom

A thesis submitted to The University of Manchester for the degree of Doctor of Philosophy (PhD) in the Faculty of Humanities.

2015

Dharmi Kapadia

School of Social Sciences

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Abstract

For the degree of Doctor of Philosophy (PhD) Social Statistics
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How are social networks associated with mental health service use? A comparison between Pakistani women, and women of other ethnic groups in the United Kingdom

Dharmi Kapadia

Pakistani women in the UK have high levels of mental illness, alongside low levels of outpatient mental health service use, compared with women of other ethnic groups. Further, previous studies have suggested that Pakistani women have particularly low levels of social support, and high levels of social isolation which may reduce their chances of coming into contact with mental health services. However, to date, there has been little empirical evidence to support this.

This thesis investigated the mental health service use, social networks' structure and function, and the relationship between the two, for Pakistani women compared with women of other ethnic groups. This was done using a systematic review of the relevant literature, and statistical modelling using two large nationally representative datasets from the UK. The first dataset, Understanding Society, was used to formulate latent classes of support networks, subsequently used in regression models to compare the support available in Pakistani women's networks with women of other ethnic groups. The second dataset, Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC), was used to ascertain the influence of social networks (perceived social support, contact with relatives and friends, network composition, and size) on the use of outpatient mental health services, using logistic regression modelling. These data were also used to build a structural equation model to test the direct and indirect effects of social networks on outpatient mental health service usage, via their impact on mental illness.

Pakistani women (along with Bangladeshi women) had the lowest rate of mental health service use, compared with women in other ethnic groups. Further Pakistani women were more likely to be socially isolated than White majority women, but there were largely no differences between Pakistani women and other ethnic minority women in the structure and function of social networks. Finally, there was evidence to suggest that social networks indirectly reduced mental health service use via their impact on mental illness. There were only small ethnic differences in the indirect effect of social networks on mental health service use, and these differences did not explain Pakistani women's under-use of mental health services.

Declaration

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Chapter 1: Introduction & Background

This thesis aims to investigate Pakistani women's use of mental health services, the nature of their social networks, and the relationship between aspects of social networks and use of mental health services. Evidence from previous research has shown that rates of mental illness are higher for Pakistani women, compared with women of other ethnic groups, but this is alongside low levels of mental health service use. This thesis focuses on aspects of social networks as potential explanations for Pakistani women's patterns of mental health service use, as it has been suggested that the low levels of social support and high levels of social isolation experienced by these women may reduce the likelihood of these women coming into contact with mental health services. In order to fulfil the overall aim of this thesis, a systematic review of relevant literature was conducted and statistical modelling of two large-scale nationally representative household surveys was carried out (Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC), and the UK Household Longitudinal Survey (UKHLS) also known as Understanding Society).

This chapter provides an overview of ethnic inequalities in mental health service use in the UK, and a consideration of the particular problems that Pakistani women may face. It then goes on to consider why access to mental health services may be poor for these women, and how a social network perspective may improve understanding of inequality for this group, drawing on work that has been undertaken predominantly in other countries. Finally, the specific aims of the thesis are stated, and the thesis structure is outlined.

1.1. Ethnic inequalities in mental health service use in the UK

In the UK, the National Health Service (NHS) is the main provider of mental health care. It provides many different services[1] which are tailored to the severity of mental health problems. Access, referral to, and usage of, these mental health services are not equal amongst ethnic groups, despite UK legislation (Equality Act, 2010) that prohibits the unfair treatment of patients on the grounds of ethnicity. The under-use of specialist mental health services by South Asian groups (Commander, Sashidharan, Odell, & Surtees, 1997; Glover, Webb, & Evison, 2010; Her Majesty's Government & Department of Health, 2011; Raleigh et al., 2007), and the over-use of coercive mental health treatment under mental health law (commonly known as 'sectioning') for Black Caribbean and Black African groups (Bhui et al., 2003; Lawlor, Johnson, Cole, & Howard, 2012; Nazroo, 2015; Rogers & Pilgrim, 2010) have been two of the main concerns articulated by health policy commentators, clinicians, and health researchers.

The Delivering Race Equality programme (Department of Health, 2005) was the government's most recent response to these evident ethnic inequalities. This was a national programme that ran from 2005 to 2010 in England and Wales to ensure "equal treatment for equal need" (Smaje & Le Grand, 1997: 485) in mental health services provided by the NHS. Its aims were to increase the appropriateness of services for ethnic minority groups, increase community engagement in order to deliver these services, and improve ethnic monitoring (recording ethnic group for patients in all contacts with mental health services). It was implemented as a response to the death of David Bennett, a British Black Caribbean man, who died whilst being unduly restrained by five nurses in a secure psychiatric unit in Norwich, England, in 1999. As a result of the independent inquiry into his death (Sallah,

[1] Typically, primary care services (consultation with General Practitioners (GPs) or psychological wellbeing practitioners (PWPs)) are for patients with minor or moderate mental health problems, such as low level depression or anxiety. Secondary care services (counselling, clinical psychology sessions, psychiatric assessment, community mental health team services, day patient services at mental health hospitals, inpatient services) are for patients with more severe or enduring mental health problems. Finally, tertiary mental health care services (forensic psychiatric secure services, eating disorder units, perinatal mental health units) are made available for patients with very specific, specialist mental health care needs.

Sashidharan, Stone, Struthers, & Blofeld, 2003) that highlighted both the overt and unwitting discriminatory care towards David Bennett and his family, the Department of Health acknowledged that 'institutional racism'[1] (National Institute for Mental Health in England, 2003) exists and operates within NHS mental health care systems to the detriment of many ethnic minority groups' health (Bhui & Sashidharan, 2003; Fernando, 2012; Joint Commissioning Panel for Mental Health, 2014; McKenzie & Bhui, 2007).

David Bennett's death was one example of a long history of poor care and treatment of ethnic minority patients in NHS mental health services. Evidence from research studies shows that compared with White majority patients, many ethnic minority patients have worse experience of, and outcomes after, use of mental health services (Bhui & Bhugra, 2002; Bhui et al., 2003; Raleigh et al., 2007), as well as reporting poor treatment from mental health professionals (Bowl, 2007a, 2007b). Since the end of the Delivering Race Equality (DRE) programme, these inequalities seem to have continued. Although there were some modest improvements in access to, and quality of, services in local geographical areas (Fountain & Hicks, 2010), overall, ethnic disparities in mental health service use have remained, indicating that the programme had limited success (Bhui, Ascoli, & Nuamh, 2012; Craig & Walker, 2012; Joint Commissioning Panel for Mental Health, 2014; RAWOrg (Rights and Wellbeing of Racialised Groups), 2011). For example, the most recent mental health service use statistics from the NHS show lower post-treatment recovery rates from mental illness for ethnic minority patients, compared with

[1] The term institutional racism was first used by Stokely Carmichael and Charles Hamilton, during the 1960s civil rights movement, to describe the "active and pervasive operation of anti-black attitudes and practices… [which] permeate the society, on both the individual and institutional level, covertly and overtly" (Carmichael & Hamilton, 1967: 5). This was re-defined, by Sir Macpherson, during a public inquiry into the death of Stephen Lawrence, a young British Black Caribbean man murdered in a racially motivated attack in London, England in 1993. Macpherson restated institutional racism as, "The collective failure of an organisation to provide an appropriate and professional service to people because of their colour, culture, or ethnic origin. It can be seen or detected in processes, attitudes and behaviour which amount to discrimination through unwitting prejudice, ignorance, thoughtlessness and racist stereotyping which disadvantage minority ethnic people" (Macpherson, 1999).

White patients (Community and Mental Health Team: Health and Social Care Information Centre, 2015a), as well as poor ethnic data recording (Mathur et al., 2014).

However, some psychiatrists have argued that the focus on institutional racism is misguided, and unhelpful for redressing ethnic inequalities in mental health services (Singh & Burns, 2006; Singh, 2007; Singh et al., 2014), as such a focus serves to create (further) mistrust of NHS mental health professionals amongst ethnic minority groups. In addition to the denial of NHS institutional racism, there has also been increasing momentum for a narrative that lays the blame of unequal treatment in mental health services on ethnic minority groups themselves. This is done by suggesting that some ethnic minority groups do not access services at the point when they are needed, but instead access them at the point of crisis (Agius, Talwar, Murphy, & Zaman, 2010; Islam, Rabiee, & Singh, 2015). This narrative ignores the power of health professionals in their roles as gatekeepers to specialist mental health care. Indeed, previous research has shown that ethnic minority groups are less likely to be referred to appropriate specialist mental health services by GPs (Adamson, Ben-Shlomo, Chaturvedi, & Donovan, 2003; J. Cooper et al., 2006).

In order to address, in part, the lack of referral to mental health services for patients (although not specifically for ethnic minority patients) the Improving Access to Psychological Therapies (IAPT) Programme (Department of Health, 2008, 2011) was implemented in England in 2011. This programme was designed to make available short term talking therapies (such as Cognitive Behavioural Therapy (CBT)) to people with mild to moderate mental health problems, such as anxiety or depression. One of the innovations of this programme was the mechanism for patients to self-refer themselves to psychological therapy services, circumventing the requirement to be referred by GPs, or other health and social care professionals. However, evaluation of these services has shown that although ethnic minority groups are more likely to gain access to services via self-referral, rather than be referred by GPs (Parry et al., 2010), they still have poorer access to these services (Clark, 2011; Clark et al., 2009; Glover et al., 2010).

As highlighted earlier in this section, people from South Asian groups may be particularly disadvantaged in accessing specialist mental health services when in need, in part due to a lack of referral by GPs. Much research has focussed on the experiences of South Asian women, particularly the barriers faced by these women in obtaining appropriate treatment for mental health problems. The reasons for the focus on this group, and the findings of previous studies, are covered in the next section.

1.2. The disadvantage faced by South Asian women

South Asian women are one group for whom mental health service use is thought to be lower than would be expected, given the prevalence of mental illness for these women (J. Cooper et al., 2006, 2010; Glover & Evison, 2009; Her Majesty's Government & Department of Health, 2011). In the UK, and in the context of this thesis, the term South Asian refers to being born in, or having parents born in Pakistan, India or Bangladesh. Other definitions of South Asian are possible, for example including those born in, or with origins in, Sri Lanka and Nepal (South Asia, 2015b) (and even extending this to include those born in, or with origins in, The Maldives, Bhutan and Afghanistan (South Asia, 2015a)). The first definition is used predominantly in the UK due to the substantial migration from these three countries, which took place mainly from the 1950s to 1970s (Harriss & Shaw, 2009). Migration from these countries has continued since the 1970s, but on a smaller scale with university students constituting a substantial proportion of newer migrants, particularly in the Indian group (Simpson & Jivraj, 2015). The figures from the most recent (2011) Census[1] show that there were almost 3 million South Asian (Pakistani, Indian or Bangladeshi) people residing in England and Wales, constituting 5.3% of the total population. Of these, over 1.1 million were Pakistani (576K females), over 1.4 million Indian (720K females), and just less than 0.5 million Bangladeshi (230K females).

[1] Census data downloaded from www.nomisweb.co.uk (2015). Figures taken from Table DC2101EW (Ethnic group by sex by age).

There has been much policy and research interest in South Asian women, with concerns articulated that these women have poorer mental health (Anand & Cochrane, 2005), and a higher risk of attempted suicide and self-harm compared with White women (Bhugra, Desai, & Baldwin, 1999; J. Cooper et al., 2006; McKenzie, Bhui, Nanchahal, & Blizard, 2008; Soni Raleigh, 1996), but do not access or use mental health services commensurately with their level of ill health (Her Majesty's Government & Department of Health, 2011). This presents a discernible public health concern, and consequently, there have been many attempts at explanations for the under-utilisation of mental health services by South Asian women, with a view to informing policy and practice to improve their levels of access and usage.

Before explicating the reasons that have been advocated for the under-use of mental health services by South Asian women, it is important to highlight that over the past 30 years, a particular narrative about the health behaviours of South Asian, or Asian, women in the UK has emerged. This narrative has permeated research and practice beyond the field of mental health care, into other arenas of health (especially maternity care), whereby South Asian women have been portrayed negatively as a group that does not access services that they 'should be' accessing (Atkin, 2004), leading to higher morbidity, and in some cases, higher mortality (Bowler, 1993; Rocheron, 1988). As well as blaming South Asian women's lack of help-seeking for under-treatment, this narrative inherently blames South Asian culture (e.g. lifestyle, beliefs, supposed cultural practices associated with being South Asian), for the incidence and progression of physical health problems (Ahmad & Bradby, 2007; Bowes & Meehan Domokos, 1996; Chapple, Ling, & May, 1998; Gupta, de Belder, & O'Hughes, 1995), and mental illness, including self-harm and attempted suicide (Bhugra, 2002; Hicks & Bhugra, 2003; Soni Raleigh & Balarajan, 1992). By ascribing health problems to South Asian culture in this way, and associating them with a particular ethnic group, South Asian women have become 'racialised' (Nazroo, 1998, 1999). This process of racialisation incorrectly supposes that health problems and health

behaviours are a consequence of 'being South Asian', rather than acknowledging that poor health is largely a result of the problems that women in this group face. Of particular importance are the substantial proportions of South Asian women (particularly Pakistani, and Bangladeshi women) who live in poverty (Finney, Kapadia, & Peters, 2015; Nandi & Platt, 2010), a known correlate of poor physical and mental health (Marmot, 2010; Tudor Hart, 1971). In addition, the experience of racism and discrimination, experienced by significant numbers of these women (Currer, 1984; Kai & Hedges, 1999), also explains their high levels of poor health (Karlsen & Nazroo, 2002; Nazroo, 2003).

Much of the previous research that has been carried out to explain the mental health care pathways of South Asian women has highlighted, or sometimes perpetuated, these cultural stereotypes that are prevalent in the UK. There are three broad themes into which previous research can be categorised: (1) under-detection of mental illness due to high levels of somatisation in South Asian women, leading to lack of referral to specialist mental health services, (2) preference for use of mental health services outside of NHS and statutory services, and (3) unwillingness to seek help due to the stigma of mental illness.

First, there has been proliferation of the idea that South Asian women are more likely to present to GPs with somatic symptoms of mental illness (Beliappa, 1991; Ineichen, 1987, 2012; Krause, 1989), compared with other ethnic groups, thereby leading to an under-detection of mental health problems, and a lack of referral to specialist mental health services for those in need. This "somatization (sic) thesis" (Rogers & Pilgrim, 2010: 105) suggests that the expression of mental illness in South Asian women is different (in that South Asian women are more likely to present with physical health problems as expressions of mental health problems, compared with White majority women) to the point that GPs and mental health professionals do not detect mental illness in consultations. The extent of somatisation may also mean that mental illness is not detected by instruments designed to identify mental illness that have been produced for use with White majority populations (Kleinman, 1987).

However, large scale national community studies that have compared the expression and measurement of mental illness between South Asian women and other women, have shown that although there might be a slightly higher tendency for somatisation of symptoms for South Asian women (Das-Munshi, Castro-Costa, Dewey, Nazroo, & Prince, 2014; Nazroo & O'Connor, 2002), this is not of the magnitude that has been suggested in other small, purposively sampled, studies (Sheikh & Furnham, 2012; Wilson & MacCarthy, 1994). Further, in-depth qualitative studies have shown that mental distress is expressed largely in the same way amongst South Asian women and White women, with common terminology (Fenton & Sadiq-Sangster, 1996; Mallinson & Popay, 2007). This suggests that the role of apparent excess of somatisation in South Asian women, leading to the under-detection of mental illness, has been exaggerated in its influence on health professionals' referral of South Asian women to specialist mental health services. Instead it has been implied that it is health professionals' stereotypes of South Asian women that may lead to less referral of these women to specialist mental health services. These stereotypes include the idea that South Asian women's problems are a result of their cultural background (e.g. notions that women are subordinate and oppressed, living in large extended families, pressured into arranged marriages) that do not require psychological or psychiatric intervention (Batsleer, Chantler, & Burman, 2003; Burr, 2002; Chantler, Burman, & Batsleer, 2003).

Second, it has been suggested that South Asian women, perhaps due to adverse experiences of health services (Chantler et al., 2003), or due to lack of knowledge about which statutory services are available and how to access these (Netto, Gaag, Thanki, Bondi, & Munro, 2001), have a preference for seeking help from sources and services outside of statutory health care. Of particular salience are the services provided by voluntary and community organisations specifically for ethnic minority women. Research has shown that South Asian women may feel that services provided by these types of organisations are more suitable for them (Bhardwaj, 2001; Kalathil, 2011), in terms of the non-English

language that services are provided in, which is necessary for some women, and the comfort with which they can speak to professionals working in these services, given that these services were often set up specifically for women from their ethnic backgrounds. Although there have been several studies with South Asian women that have shown that these services are important, and are used by women, none have ascertained whether voluntary sector services are accessed more frequently by South Asian women compared with other women, because this has not been the focus of any research conducted with the voluntary sector (Keating, 2002).

Similarly, the evidence in relation to the use of traditional or religious healers and alternative medicines by this group of women, compared with other women, is lacking in the field. Some researchers have stated that "there is a strong tradition of alternative healing" (Ineichen, 1987: 138) for people from South Asia, however empirical evidence shows that this is not widespread (Ahmad, 1992; Commander, Odell, Surtees, & Sashidharan, 2004; Donaldson, 1986). One study undertaken with 10 South Asian women in Birmingham showed that women cited religious healers or rituals as a source of help (F. A. Hussain & Cochrane, 2003) but this was reported alongside use of statutory services. Similar findings (concurrent use of traditional medicine and statutory services) emerged from case study work by Dein and Sembhi (2001), with 25 South Asian psychiatric patients in London. Overall, although the research evidence is scarce, findings to date suggests that the use of voluntary sector services and traditional healers does not replace the use of statutory services, nor does it provide a satisfactory explanation for the under-use of mental health services by South Asian women.

The final reason, considered here, that has been given for the under-use of mental health services in South Asian women is the apparent high levels of (perceived) stigma[1] related to mental illness displayed by this group, their family members and close networks. Many studies undertaken with this group have suggested that these high levels of stigma stop women from seeking help from formal services, because of worries that their families' reputations would be tarnished. Further, these studies have shown that women may be unwilling to seek help due to fears that members of their community (who are of the same ethnic group) will find out about their problems, due to a perceived lack of maintenance of confidentiality by health professionals, who are of the same ethnic group (Bradby et al., 2007; Gilbert, Gilbert, & Sanghera, 2004; Knifton, 2012; Shefer et al., 2013; Time to Change, 2010). Often this research has been done with small samples of South Asian women, without comparisons with other ethnic groups. Hence, although it may be the case that there are high levels of stigma faced by these women, there have not been any studies in the UK that have compared levels of stigma between ethnic groups, in order to quantify this. Although, evidence from comparative studies from other countries has shown that stigma may be greater for ethnic minority groups compared with White majority groups (Anglin, Link, & Phelan, 2006; Gary, 2005), overall, the continued use of high levels of stigma as an explanation for the under-use of mental health services for South Asian women may be misleading.

[1] 'Stigma' is defined by Goffman as "an attribute that is deeply discrediting" (Goffman, 1963: 13) that serves to "disqualif[y]" a person or a group of people "from full social acceptance" (Goffman, 1963: 11). Goffman considers attitudes such as these to be deeply harmful to those that are stigmatised, stating, "By definition, of course, we believe the person with a stigma is not quite human. On this assumption, we exercise varieties of discrimination, through which we effectively, if often un-thinkingly, reduce his life chances" (1963: 15). Stigma does not only affect the individual who is stigmatised. Relatives and friends can also be subject to discriminatory treatment too, simply by being associated with the stigmatised individual. Goffman refers to this as "courtesy" stigma (1963: 44), and others have named it stigma 'by association' (Ostman & Kjellin, 2002). Studies that have stated stigma related to mental illness is higher in South Asian families and communities, suggest that not only is perceived stigma high for South Asian women suffering with mental illness, but the courtesy stigma felt by relatives is also high.

1.3. The move to a focus on Pakistani women

The studies referred to in the preceding section have purported to conduct research on the mental health, and mental health service use, of South Asian women. However, to be precise, many were carried out with one small group within the broader category of South Asian women, and data collection was confined to one small geographical area of the UK. For example, Mallinson and Popay's study (2007) recruited Pakistani women in Manchester, Wilson and MacCarthy (1994) conducted their research in North West London, recruiting mainly (90%) women born in Gujarat, (a state in India) or East Africa[1], and Fenton and Sadiq-Sangster's study (1996) focussed on women from Pakistan and India, originating from, or near, the Punjab region, now living in Bristol. Hence, making statements about 'South Asian women' in the UK based on research undertaken with specific subpopulations of the South Asian group assumes that the experiences and health statuses of all women within this group are similar. However, it has become apparent that this is not the case and by breaking down the category of South Asian women into categories based on women's country of origin (Pakistani, Indian and Bangladeshi), important differences emerge between these groups which makes them worthy of study separately.

Recent studies, using UK survey and census data, have shown that Pakistani and Bangladeshi women are more likely to be living in poverty compared with Indian women (Jivraj & Khan, 2015; Nandi & Platt, 2010), as well as more likely to be out of the labour market (Kapadia, Nazroo, & Clark, 2015). These socioeconomic differences are important when investigating use of mental health services, as previous research has shown that both living in poverty (Goddard & Smith, 2001) and economic inactivity (Bebbington et al., 2003) increase the use of mental health services. In addition, many studies have shown that

[1] It was stated earlier in section 1.2 that most foreign-born South Asian people in the UK migrated from Pakistani, India or Bangladeshi. However, some Indians migrated from India to East Africa (Uganda or Kenya), and subsequently migrated to the UK (Bhachu, 1985). Hence, the reason for recruitment of women born in East Africa, for Wilson and MacCarthy's study.

Pakistani and Bangladeshi women have worse physical health than Indian women (Becares, 2015; Calderwood & Tait, 2001; Natarajan, 2006; Nazroo, 1997), which may also be a risk factor for poor mental health (Goldberg, 2010; Moussavi et al., 2007).

Most importantly, evidence from four nationally representative community surveys in England has shown that the rates of mental illness amongst Pakistani, Indian and Bangladeshi women are not the same. And although the findings have not been consistent across surveys, there has been some indication that Pakistani women have higher levels of mental illness than Indian and Bangladeshi women. Using The Fourth National Survey of Ethnic Minorities (Modood et al., 1997), Nazroo (2001) found that the weekly prevalence of neurotic depression[1] was similar for Pakistani and Bangladeshi women (analysed together in one group, age Standardised Relative Risk Ratio [SRR] = 0.55, 95% Confidence Interval [CI][2] = 0.30 – 1.00), and Indian women (SRR = 0.64, CI = 0.38 – 1.07), and was not statistically any different from that found in White women (SRR = 1). From the same survey, Nazroo also found that the prevalence of non-affective psychotic disorders was no different between Pakistani and Bangladeshi (SRR = 0.76, CI = 0.27 – 2.14), Indian (SRR = 0.80, CI = 0.31 – 2.08), and White women (SRR = 1). However, the author advises that the way depressive disorders were measured in the survey may have resulted in an underestimation in rates for Pakistani, Bangladeshi and Indian groups (Nazroo, 2001). This was because the items measuring somatic symptoms were omitted from the Clinical Interview Schedule Revised (CIS-R, Lewis, Pelosi, Araya, & Dunn, 1992), on the basis of which depression prevalence was estimated.

[1] In the Fourth National Survey, the Clinical Interview Schedule Revised (CIS-R, Lewis et al., 1992) was not administered in full to participants; somatic items were excluded. Hence psychiatric diagnostic categories could not be derived from the CIS-R scores. Instead the author estimated the likely number of cases of neurotic depression in the each population "by using the relationship between the chance of meeting the criteria for neurotic depression and the number of CIS-R items scored" (Nazroo, 2001: 60). Neurotic depression was based on the definition used in CATEGO classes. The same method was used to estimate the prevalence of psychotic disorders using the PSQ.

[2] All confidence intervals reported in this chapter are 95% confidence intervals, and are denoted by 'CI' throughout.

The Health Survey for England (HSE) 1999 (Erens, Primatesta, & Prior, 2000), also allowed comparison of the rates of mental illness for Pakistani, Bangladeshi and Indian women, using the 12 item version of the General Health Questionnaire (GHQ12, Goldberg & Williams, 1988). Using this survey, Calderwood and Tait (2001) showed that the age standardised risk ratio for scoring 4 or more (representing clinical caseness) on the GHQ12 for Bangladeshi women (SRR = 1.57, Standard Error (SE) = 0.15) was higher than for Pakistani (SRR = 1.27, SE = 0.14), and Indian (SRR = 1.26, SE = 0.11) women, and higher than in the general population (SRR = 1).

When this same sample was followed up one year later for another survey, Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC, Sproston & Nazroo, 2002), the findings were slightly different from the two surveys mentioned previously. Pakistani women had higher rates (Rate Ratio (RR) = 1.37, CI = 1.07 – 1.77) of Common Mental Disorder (CMD), according to the CIS-R (which this time was used with somatic symptom items) than Indian (RR = 1.25, CI = 0.96 – 1.64)), and Bangladeshi (RR = 0.65, CI = 0.47 – 0.92) women, and all other ethnic groups (Weich et al., 2004). There was no difference in the prevalence rates of psychosis symptoms between Pakistani, Indian and Bangladeshi women, and these three rates were no different to the rate of White women (Nazroo & King, 2002).

Finally, using the Health Survey for England (HSE) 2004 (Sproston & Mindell, 2006), Natarajan (2006) found that Pakistani women (SRR = 1.73, SE = 0.24) had higher rates of mental illness (scoring 4 or more on the GHQ12) than Indian (SRR = 0.99, SE = 0.13), and Bangladeshi (SRR = 1.37, SE = 0.23) women, and all other ethnic groups.

The findings of higher rates of mental illness for Pakistani women from the EMPIRIC survey, and the HSE 2004, have been added to by local prevalence studies. Fazil and Cochrane (2003), using a sample of 200 women (100 Pakistani and 100 White British) recruited from a GP practice in East Birmingham, found that Pakistani women had higher levels of mental illness, as measured by the 28 item version of the General Health

Questionnaire (GH28, Goldberg, 1981) than White women (32.49 vs. 21.97, difference = 10.52, t = 4.02, p<0.001). Two further studies have been undertaken with Pakistani women in the Manchester area in England (Chaudhry, Husain, Tomenson, & Creed, 2012; Gater et al., 2009). The first, conducted by Gater and colleagues (2009), assessed the level of depression in Pakistani and White women recruited from four GP practices in Central Manchester and found the odds of reporting depressive disorder (as measured by the Schedule for Clinical Assessment in Neuropsychiatry (SCAN, Wing et al., 1990)) to be higher for Pakistani women than White women (OR = 2.1, CI = 1.2 – 3.7, p=0.008). The other study, undertaken by Chaudhry and colleagues (2012), was not comparative (with respect to White women, or women of any other ethnic groups) but it highlighted the potentially high levels of depressive disorder for Pakistani women. They found that almost half (46.6%) of the Pakistani women in their sample, recruited from four GP practices in Central Manchester, scored 7 or more (cut off for probable mental illness) on the Self-Reporting Questionnaire (SRQ, World Health Organisation, 1994).

The reasons for the higher levels of mental illness for Pakistani women have been investigated to some extent in the UK, and it has been found that high levels of poor mental health may be due to experiences of racism and discrimination faced by this group (Karlsen, Nazroo, McKenzie, Bhui, & Weich, 2005). Research into other possible reasons for poor mental health in this group is not extensive in the UK but it is possible that these elevated rates are seen because of higher (than other ethnic groups) levels of poor physical health (Becares, 2015; Nazroo, 2001), higher levels of poverty and propensity to live in deprived areas (Jivraj & Khan, 2015; Nandi & Platt, 2010), and higher rates of being out of the labour market (Dale, Shaheen, Kalra, & Fieldhouse, 2002; Kapadia, Nazroo, et al., 2015). However it is not entirely clear why the rates of mental illness in recent years are much higher for Pakistani women than for Bangladeshi women, given that the socioeconomic status of Bangladeshi women is very similar, if not worse, than Pakistani women. Hence it would be expected that Bangladeshi women would have similar, if not

worse, mental health than Pakistani women, given that it is has been widely established in the UK that people of lower socioeconomic statuses are more likely to have poor mental health (Marmot, 2010; World Health Organisation, 2014). Given the emerging evidence that Pakistani women have worse mental health than Bangladeshi, Indian and White majority women, it is important to investigate their use of mental health services, separately from Bangladeshi and Indian women, as if rates of mental health services use are low for Pakistani women (as it has been suggested for South Asian women overall), it would imply that Pakistani women's needs are not being met by statutory mental health services. The next section considers what is known and not known about Pakistani women's mental health service use, and potential reasons for these patterns of mental health care.

1.4. Pakistani women's patterns of mental health service use

It seems there is very little that is known about the mental health service use of Pakistani women. Researchers that have suggested rates of use are low for these women (Chaudhry, Waheed, Husain, Bhatti, & Creed, 2009; Gater et al., 2010) have inferred these results from studies that have been undertaken with South Asian women (as described in section 1.2), some of which did not include any, or very few, Pakistani women. In addition, some of the research that has been undertaken to investigate Pakistani women's use of mental health services, has been done on the rationale that service use is low, based on observations in clinical practice by GPs, psychiatrists or clinical psychologists, practising in areas of high Pakistani ethnic density such as Manchester, Sheffield and Birmingham (Hackett et al., 2009; N. Hussain, 2006; Kanwar & Whomsley, 2011; Penny, Newton, & Larkin, 2009). Although these researchers may not be incorrect, per se, observations such as these cannot be used to unequivocally state the under-use of mental health service by Pakistani women.

In order to establish whether Pakistani women's rates of service use are lower than other ethnic groups, and if they are lower than would be expected given their higher (than other ethnic groups) levels of mental illness in the population, comparative studies are needed. This latter point is an important one, as low rates of service use alongside high levels of mental illness, is suggestive of inequality in usage of mental health services (Smaje & Le Grand, 1997) for Pakistani women, and forms the basis of the primary rationale for this thesis. There have been very few comparative studies in the UK that have aimed to ascertain Pakistani women's rates of use separate from Bangladeshi and Indian women, and women of other ethnic groups, and even fewer that have taken into consideration how these rates relate to the differing levels of mental illness in each ethnic group. Hence it is not known whether Pakistani women, as a distinct group, have low rates compared with women of other ethnic groups. The findings of studies that have compared mental health service use rates between Pakistani women, and women of other ethnic groups are synthesised, critiqued, and discussed in detail in the systematic review that is presented in Chapter 3 of this thesis.

Some of the studies that have found high rates of depression in Pakistani women have stated that this is the case because they are socially isolated or lack social support (Chaudhry et al., 2012; Gater et al., 2009). Although the influence of social support on mental illness is not the primary concern of this thesis, it is a specific aim of this thesis to investigate how social networks are associated with mental health service use for Pakistani women compared to women of other ethnic groups, in an attempt to explain any ethnic differences between groups. In order to do this, it is first necessary to consider what is known about the nature of Pakistani women's social networks. This is the focus of the next section.

1.5. Pakistani women's social networks

Few studies in the UK have examined the nature of Pakistani women's social networks and how these compare to women of other ethnic groups. Two studies undertaken with this population of women have proposed that these women are particularly socially isolated, and lacking in social support. Gater and colleagues (2009), comparing Pakistani and White women recruited from four GP practices in Central Manchester, found that although there was no difference in the levels of social isolation or social support between Pakistani and White women, Pakistani women were more likely to say that they were dissatisfied with their levels of social support (OR = 16.1, CI = 5.3 – 49.1, $p<0.0005$). However, the way in which social support was defined in this study was not clear; the authors state that they used the Life Events and Difficulties Schedule (LEDS, G. W. Brown & Harris, 1978) but did not provide any information on how social support was derived from this measure. The idea that Pakistani women are particularly lacking in social support was also the basis of research by Chaudhry and colleagues (2012), who stated that social support was lacking for women with depressive disorder in a sample of Pakistani women recruited in Manchester, without comparing Pakistani women's levels of social support to women in other ethnic groups.

These two studies have not clearly established the nature of Pakistani women's availability of social support, and particularly there is little evidence to suggest that they are lacking in social support to greater degrees than women in other ethnic groups. There has been very little work that allows comparison of women's social networks across ethnic groups (all such work is identified and discussed in the systematic review presented in Chapter 3). Recent work by Finney and colleagues (Finney et al., 2015) has suggested that Pakistani people may be socially isolated due to the high numbers reporting 0 or 1 close friend to a greater extent (19%) than all other ethnic groups, apart from Black African people (22%). They also found that people in poverty in each ethnic group (using 10 ethnic groups: White British, White Irish, Other White, Indian, Pakistani, Bangladeshi, Black

Caribbean, Black African, Mixed and Other). Although this analysis was not done separately for men and women, it used a large nationally representative dataset, allowing the findings to be generalised to the population of the UK. This work suggests that Pakistani people may have smaller social networks; this could be because Pakistani women and men are less likely to be in the labour market (Kapadia, Nazroo, et al., 2015), which may reduce opportunities to make friends outside the home, compared with some other ethnic groups (e.g. White British, Indian, White Irish) who are much more likely to be in the labour market.

As well as the idea that Pakistani women are lacking in social support, there has also been an opposing suggestion that Pakistani women are in a position to gain a high level of social support from their social networks, because they are more likely to live in large extended families and perhaps have contact with a large number of people from their own ethnic group. However the basis for such a notion has been inferred from findings of anthropological studies undertaken with Pakistani men in cities in Northern England (Anwar, 1979; Kalra, 2000; Werbner, 1979), the findings of which cannot be assumed to hold for women.

Although there is some evidence to suggest that Pakistani women (as well as Bangladeshi and Indian women) live in larger households, and have greater contact with their non-immediate family than White majority women (Berthoud & Beishon, 1997) this does not equate to more or better social support. The narrative of greater social support for Pakistani women, suggestive of a lesser need for support from statutory services, is certainly something that has been suggested in the literature relating to caring for elderly relatives amongst ethnic groups, with suggestions that ethnic minority groups "look after their own" (Katbamna, Ahmad, Bhakta, Baker, & Parker, 2004; Murray & Brown, 1998). This has been shown to be inaccurate in relation to the amount of support available to Pakistani carers, compared with White carers (Willis, Price, & Glaser, 2013), with support being about the same for both groups. Hence the nature of Pakistani women's social

support networks, and how they compare to women of other ethnic groups, is not entirely clear.

Further, since social networks are often (but not always (cf. Wellman, 1999)) forged within local geographical areas (Fischer, 1982), the place in which women live may be an influencing factor on the content of, and support provided within, social networks. For example, previous research carried out in deprived neighbourhoods in London, England, showed that the opportunity to form close relationships within a local area were limited, if there was a lack of local facilities where people could meet or use to come together e.g. local shops, community centres and outdoor communal spaces (Cattell, 2001). Hence area deprivation may influence the size of networks, the diversity of contacts and opportunities to develop close relationships which can provide social support. Since Pakistani and Bangladeshi women are the most likely to be living in the 10% most deprived neighbourhoods in England and Wales, compared with all other ethnic groups (Jivraj & Khan, 2015), it is possible that these women experience higher levels of social isolation than other women

However, there are some characteristics of place that may be beneficial for women's social networks. Particularly, living in own ethnic group dense areas may influence the amount or quality of social support in women's networks, and importantly, this in turn may impact on levels of mental illness. Previous research in the UK has shown a protective effect of ethnic density on mental health for some ethnic minority groups, particularly Bangladeshi and Irish groups, but the pattern for Pakistani people has tended to be different. Firstly, ethnic density has been shown to be associated with *higher* odds of reporting psychotic symptomatology for Pakistani people (Becares, Nazroo, & Stafford, 2009). Second, research building on Becares and colleagues' (2009) work has shown that there was no evident increase in psychotic symptoms for Pakistani people, with a 10% decrease in own ethnic group density (Das-Munshi et al., 2012). Further, there was no reduction in common mental disorders for living in high ethnic density areas (Das-Munshi,

Becares, Dewey, Stansfeld, & Prince, 2010), and one of the reasons for this was the lack of difference in social support networks by increasing ethnic density for Pakistani people.

The studies that have attempted to establish what social support is like for Pakistani women, and studies that have compared social support between Pakistani women, and women of other ethnic groups, are evaluated in detail in the systematic review that is presented in Chapter 3 of this thesis.

1.6. The relationship between social networks and mental health service use

The two previous sections have shown that, first, Pakistani women's mental health service use may be low, and second, they may have low levels of social support. The research evidence on which both of these assertions are based is not entirely convincing, hence the decision to undertake a systematic review of existing literature as part of this thesis (the findings of which are detailed in Chapter 3), to clarify, and expand upon, both of these findings. The third question that is also considered in the systematic review is the potential reasons for Pakistani women's patterns of mental health service use, and if social networks are involved in the help-seeking process. As mentioned in section 1.4, many of the reasons given for Pakistani women's patterns of use have been inferred from research undertaken with small subsections of the 'South Asian group', and may not apply to Pakistani women in England. Many of the reasons that have been put forward for potential under-use of services have focussed on characteristics of the individual (e.g. unwillingness to seek help from statutory services), or problems with NHS professionals and practices (e.g. lack of referral by GPs to specialist mental health services).

There has been less consideration of women's social networks and how they may play a role in decisions to seek help and influence mental health care pathways. For

example, in a recent pilot study of a social intervention[1] for depressed Pakistani women undertaken in Manchester, the authors stated that one of the aims of the intervention was to "facilitate the development of informal networks that will engage these women in social contacts and if needed will later link them with appropriate mental health services (Chaudhry et al., 2009: 505). Although this pilot study showed that such an intervention had the potential to reduce depressive symptoms, it was not designed to show if women's social networks were associated with mental health service use, and hence does not provide any information about the relationship between social networks and mental health service use. Indeed, there have been few studies undertaken in the UK to assess whether there is an association between aspects of social networks, and mental health service use.

The relative absence of the consideration of social networks as part of the explanation for seeking and using mental health services in the UK, is surprising, given the theory and evidence on this relationship from other countries, particularly from the United States (US). The idea that people that we know, speak to, and have close relationships with, are influential in decisions to seek help for mental health problems when they arise, has been theorised comprehensively as part of the Network-Episode Model (NEM) put forward by Bernice Pescosolido (Pescosolido & Boyer, 1999; Pescosolido, Wright, Alegría, & Vera, 1998; Pescosolido, 1992, 2006, 2010, 2011), and suggested by Nancy Gourash (1978) as a result of a comprehensive literature review of help-seeking.

Pescosolido's formulation of the NEM, in part, was a response to dominant rational action theories[2] that focussed on individual characteristics to explain health service utilisation (Pescosolido, 1992). The NEM, instead, brought to the forefront the social interactions that take place in social networks, and posited them as fundamental in the

[1] The intervention consisted of 10 groups sessions facilitated by two mental health professionals: one introductory session, one on psycho-education of mental illness, three on indoor activities (personal grooming, yoga, exercise), four outdoor activities (including visits to the museum and a shopping mall), and one farewell session.

[2] For example, Rosenstock's Health Belief Model (1966), and Andersen's Socio-Behavioural Model (1968) (cited in Pescosolido, 1992). As the aim of this thesis is to specifically investigate the influence of social networks on mental health service use, neither of these theories are described further here.

decisions to seek help from healthcare providers, or other sources. These social interactions are important because they provide information (on the nature of the illness, on where to get help), convey beliefs (positive and negative) about mental illness and the usefulness of statutory mental health services, and advice on the courses of action to take (Pescosolido, 2011). As a result of these interactions within social networks, people suffering from mental illness, make choices about what to do; in this sense the NEM acknowledges that individual's choices are part of the dynamic process of pathways to care, along with social interactions. This is not to say that the advice resulting from social interactions is always followed, as shown in empirical work by Pescosolido (Pescosolido, Gardner, & Lubell, 1998), as people may disagree with the opinions of family, friends and others in social networks, and may even be coerced into formal mental health care.

At the crux of the NEM, as well as the idea that social interactions strongly influence help-seeking, is the shift from a focus on individual instances of help-seeking to a focus on the entire illness career[1]. In addition, updated versions (or phases) of the NEM acknowledge the embeddedness of social networks within larger communities, and treatment systems (NEM Phase II, Pescosolido & Boyer, 1999), and biological characteristics that may influence "predispositions" to use aspects of networks (NEM Phase III, Pescosolido, 2010), both of which contribute to the overall system within which social networks operate to influence mental health care pathways. In this sense, the NEM provides a whole framework through which to theorise and evaluate mental health service use.

Gourash (1978) has also suggested that functions of networks can explain why people seek help for problems and, in a similar vein to Pescosolido's NEM, has stated that social networks can affect help-seeking "by acting as screening and referral agents to professional services and… by transmitting attitudes, values and norms about help-seeking"

[1] An illness career can be thought of as similar to the life course approach, taking into consideration episodes of mental illness, contacts with mental health professionals, periods of recovery, and progression of illness over a person's entire life (Aneshensel, 2012).

(1978: 416). In addition, she has suggested that "social support" specifically may reduce the need to use formal health care services "by buffering the experience of stress which obviates the need for help and… by precluding the necessity for professional assistance through the provision of instrumental and affective support" (1978: 416).

These theoretical assertions have been given credence through empirical studies, undertaken predominantly outside of the UK, that have shown a relationship between aspects of social networks and mental health service use. The most relevant studies (to the aims of this thesis) are summarised here with respect to three aspects of social networks: social support, size, and contact with relatives and friends.

1.6.1. Perceived Social Support

There is evidence from large community studies to suggest that high levels of perceived social support decrease mental health service use. Pescosolido and colleagues (Pescosolido, Wright, et al., 1998), using the Mental Health Care Utilization Among Puerto Ricans Study, a large community survey conducted in Puerto Rico in low income areas of the island, found that for people that had used some form of formal or informal mental health service, increased perceived social support[1] was associated with greater likelihood of using a range of informal services, as well as the mental health sector, rather than the mental health sector alone (multinomial logit coefficient [MLC] for using family, friends, clergy and medical sector [vs. mental health sector only] = 2.097, $p<0.10$; MLC for using family, friends, general sector, and mental health sector vs. mental health sector only = 1.568, $p<0.10$). Similar findings were reported by Woodward and colleagues (Woodward, Taylor, Neighbors, Chatters, & Jackson, 2008), using the National Survey of American Life, a nationally representative community survey in the US. When focussing on African Americans and Black Caribbean groups, they also found that feeling close to the family was associated with a decrease in using professional mental health services only

[1] The way in which perceived social support was measured was not detailed in this paper. The authors state that "a second set of network variables tapped network support levels" (Pescosolido, Wright, et al, 1998: 1062).

(compared with using professional and informal services) (MLC = -0.44, SE = 0.14, p=0.003).

Three other studies in the US have reported similar findings. Thoits (2011), using the National Comorbidity Survey Replication (NCS-R, a US nationally representative study), found that perceived social support reduced the use of any mental health services (inpatient, outpatient, general practitioner, as well as traditional healers) (logit coefficient = -0.24, $p<0.001$). However, the measurement of perceived social support in this study was fairly limited; participants were only asked two questions each about partners, friends and relatives (how much can you rely on [partners/ relatives/ friends]? and how much can you open up to [partners/ relatives/ friends]?).

Maulik and colleagues' US study (Maulik, Eaton, & Bradshaw, 2009) found the same relationship as Thoits' study. They used the Baltimore Epidemiologic Catchment Area survey, a representative community survey in Baltimore, to show that use of speciality psychiatric services (use of a mental health professional in, for example, a psychiatric outpatient unit, or mental health centre) was lower for participants with higher levels of perceived social support from partners/ spouses (OR = 0.44, CI = 0.26 – 0.75, $p<0.01$), relatives (OR = 0.44, CI = 0.31 – 0.63, $p<0.01$), and friends (OR = 0.45, CI = 0.23 – 0.64, $p<0.01$). The same relationship was also found for the use of mental health services within general medical services for partners (OR = 0.53, CI = 0.31 – 0.90, $p<0.05$) and, relatives (OR = 0.39, CI = 0.26 – 0.57, $p<0.01$), but not friends (OR = 0.83, CI = 0.58 – 1.17, not significant). Perceived social support in this study was measured by six questions[1], asked separately of partners/ spouses, relatives, and friends, and included positive and negative aspects of support, hence providing a more comprehensive assessment of perceived social support in the network than in Thoits' study. Golding and

[1] The questions were (X represents the source of support; questions were asked separately for each source – partners/ spouses, relatives, and friends): (1) How much does X really care about you? (2) How much can you rely on X for help if you have a serious problem? (3) How much can you relax and be yourself around X? (4) How often does X make too many demands on you? (5) How often does X let you down when you are counting on X? (6) How often does X get on your nerves?

Wells' study (Golding & Wells, 1990), using the Los Angeles Epidemiologic Catchment Area survey, also found that support from relatives (measured by three items asking about extent of positive support) reduced use of mental health services (logit coefficient = -0.15, $p<0.01$).

One further study, undertaken in the Netherlands by Ten Have and colleagues (Ten Have, Vollebergh, Bijl, & Ormel, 2002), also found a similar relationship. Using the Netherlands Mental Health Survey and Incidence Study (NEMESIS, a prospective general population study), they found that low perceived social support (as measured by 23 items asking about the extent of positive support from people in the close network) was associated with the increased use of primary care services (OR = 1.51, CI = 1.19 – 1.91, $p=0.001$), and mental health care (including psychiatric clinics or psychologists) (OR = 1.78, CI = 1.31 – 2.42, $p<0.001$).

However, there are some studies that have not found this relationship. One study undertaken by Mojtabai and colleagues (Mojtabai, Olfson, & Mechanic, 2002) using an earlier version of the US NCS-R than Thoits' study, found that there was no association between social support (measured by four questions asking about positive aspects of support from partners, friends, and relatives) and use of mental health services. Two recent studies using the National Latino and Asian American Study (NLAAS), a nationally representative community study of Latinos and Asian Americans in the US, have both found no relationship between family support and use of mental health services. Villatoro and colleagues (Villatoro, Morales, & Mays, 2014), by using the Latino subsample found that there was no association between social support (measured by three items asking about extent of positive support) and formal mental health services, but they did find that higher levels of perceived family support were associated with increased use of informal or religious services (OR = 1.48, CI = 1.05 – 2.08, $p<0.05$). These results were replicated by Chang and colleagues (Chang, Chen, & Alegría, 2014) for Latinos and Asian Americans. In addition, by combining the White sample from the NCS-R with the NLAAS, Chang and

colleagues demonstrated that the effect of family support on the use of informal and religious services was greater for Latinos (OR = 1.08, CI = 1.01 – 1.15, $p<0.05$), and Asian Americans (OR = 1.15, CI = 1.06 – 1.25, $p<0.01$), compared with White Americans.

1.6.2. Network Size

The size of social networks has also been shown to be influential in the use of mental health services. With respect to the use of inpatient services by severely mentally ill people (e.g. suffering from schizophrenia), a literature review by Albert (Albert, Becker, McCrone, & Thornicroft, 1998), showed that increased use of psychiatric inpatient services was related smaller social networks. This was shown empirically by Becker and colleagues (Becker et al., 1997), in a random sample of patients with a psychosis diagnosis in two areas of South London, England. They found that larger networks were associated a decrease in psychiatric inpatient admission (OR = 0.87, CI = 0.80 – 0.96, $p=0.005$).

Other studies have shown that large networks also reduce the use of outpatient mental health services. Pescosolido and colleagues' study (1998) showed that as the size of social network increased, people were more likely to use a range of sources of help, rather than the mental health sector alone (MLC[1] for using family, friends, clergy and medical sector [vs. mental health sector only] = 5.436, $p<0.10$; MLC for using family, friends, general sector, and mental health sector vs. mental health sector only = 2.092, $p<0.10$). The findings from this study were corroborated by Woodward and colleagues' study using the NSAL (Woodward et al., 2008). By focussing on African Americans and Black Caribbean groups, they also found that larger networks were associated with a higher likelihood of using a mix of professional and informal mental health services, compared to using one of these services individually.

Using the same sample as Pescosolido's study, Albizu-Garcia and colleagues (Albizu-Garcia, Alegría, Freeman, & Vera, 2001) found a small negative effect of the

[1] Multinomial Logit Coefficient

number of supportive relatives on the use of formal mental health services (including visits to general practitioner, psychiatrist, psychologist) (OR = 0.98, CI – 0.96 – 0.98, p=0.006). Similar results were reported by Sherbourne (Sherbourne, 1988), using the Rand Health Insurance Experiment, a survey undertaken in six sites in three US states (Ohio, Washington, and South Carolina). Sherbourne found that people reporting middle ($t = -2.96$, $p<0.05$) or high ($t = -4.06$, $p<0.05$) numbers of close relatives and friends (compared to those reporting low numbers), had lower levels of mental health service use (defined as having contact with a service that involved a mental health evaluation or treatment).

1.6.3. Contact with Relatives and Friends

There is also some evidence to suggest that the frequency of contact with relatives and friends also influences mental health service use, although fewer studies have investigated this relationship. Sherbourne's study (1988) found that participants that had high levels of contact (defined as visits with family and friends) had decreased use of mental health services ($t = -2.21$, $p<0.05$), compared with participants that had low levels of social contact. Another study by Kouzis and colleagues (Kouzis, Ford, & Eaton, 2000) separated out the effect of contact with relatives and friends, and found different effects for each. Using a community probability sample survey (the Baltimore Epidemiologic Catchment Area Survey), they found that for people with high levels of distress, less contact with relatives increased the use of mental health services (OR = 2.76, CI = 1.31 – 5.83, $p<0.01$), but more contact with friends (OR = 5.12, CI = 3.56 – 7.36, $p<0.001$) also increased the use of services.

Two studies, both of which used the NSAL, found that contact with relatives was not associated with the use of mental health services. Woodward and colleagues found this specifically for African Americans and Black Caribbean people in the US (Woodward et al., 2008), and Sosulski and colleagues (Sosulski & Woodward, 2013) found this association for African American women in the US.

1.6.4. Ethnic differences in network effects on mental health service use

In summarising the main studies that have shown associations between social networks and mental health service use, an omission is apparent, which is particularly important for this thesis. None of the studies summarised in the previous section (with the exception of Chang and colleagues' study (2014)) estimated the potential differential effect of aspects of social networks between ethnic groups on mental health service use. This is despite the fact that all of the studies that were undertaken with ethnic minority groups (Chang et al., 2014; Sosulski & Woodward, 2013; Villatoro et al., 2014; Woodward et al., 2008) started from two premises: (1) that there is an under-utilisation of mental health services for the ethnic minority group under study, and (2) that the effect of support (particularly from family) for ethnic minority groups may influence them to use mental health services less, and this effect may be greater for ethnic minority groups than White majority people. This second effect may be expected due to notions (although not empirically tested) that mental illness stigma may be greater in ethnic minority groups (Gary, 2005). Hence along with the beneficial effect of increased support and contact with relatives (in reducing mental health service use), there may be an added negative effect of mental illness stigma which also reduces mental health service use, but which is greater for ethnic minority groups than White majority groups. Since it has been established that the rates of mental illness for Pakistani women are particularly high, they may be particularly disadvantaged in their access to mental health services, and previous research suggests that stigma may be particularly high for South Asian groups (Bradby et al., 2007; Gilbert et al., 2004; Knifton, 2012; Shefer et al., 2013; Time to Change, 2010) it may be the case that social networks operate to reduce mental health service use to a greater extent for Pakistani women than for women in other ethnic groups.

Hence, one of the aims of this thesis is to fill the gap in knowledge, relating to how social networks may operate differently for ethnic groups to influence mental health

service use, by focussing on Pakistani women in the UK, who have low rates of mental health service use.

1.7. How are social networks and mental health service use related?

Many of the studies summarised in the previous section showed that three aspects of social networks; perceived social support, size of network, and contact with friends and relatives, were associated with mental health service use. Most of these studies assumed that there was a direct effect between these aspects of social networks and mental health service use. However, as mentioned in section 1.6, Gourash (1978) has suggested that the effect of social networks may not be direct. One possible mechanism by which perceived support in networks, contact with relatives and size of networks may affect mental health service use is by reducing the propensity to develop mental illness (Almeida, Subramanian, Kawachi, & Molnar, 2011; Cohen & Wills, 1985; Kessler, Price, & Wortman, 1985; Stafford, Mcmunn, Zaninotto, & Nazroo, 2011; Stansfeld, Fuhrer, & Shipley, 1998), which in turn reduces mental health service as an indirect effect. Although the relationship between social networks and use of mental health services has been extensively investigated (Albizu-Garcia et al., 2001; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Pescosolido, 1992; Sherbourne, 1988; Ten Have et al., 2002; Thoits, 2011), very few studies have attempted to assess if the impact of social networks on mental health service use operates in this way.

One study that has investigated this mechanism in the US, found evidence that networks are associated with mental health service use, via their influence on mental illness. Using the African American subsample of the NSAL, Villatoro and Aneshensel (Villatoro & Aneshensel, 2014) found that negative interactions with families increased mental health service use for participants, by increasing the level of mental distress. However, this effect was not found by Golding and Wells' study (1990), in the Los

Angeles Epidemiologic Catchment Area survey. Although there have not been many other studies that have tested this mechanism, two studies with youth populations in the US (Lindsey et al., 2012; Martinez & Lau, 2011) have found similar effects to Villatoro and Aneshensel's study (2014), suggesting that this mechanism is worthy of further study.

1.8. Aims of the Thesis

This thesis aims to fill these gaps in knowledge (highlighted in sections 1.4 to 1.7) in relation to Pakistani women's rates of use of mental health services, the nature of their social networks, and how social networks may influence service use for these women, compared with women of other ethnic groups. The four specific aims are to:

i. Investigate the rates of mental health service use for Pakistani women, compared with women of other ethnic groups in England
ii. Investigate the nature of UK Pakistani women's social support networks, and how they compare with women of other ethnic groups
iii. Investigate the association between social networks and mental health service use, and if this association is the same for Pakistani women, compared with women of other ethnic groups
iv. Investigate if mental illness mediates the relationship between social networks and mental health service use, and if this mediation is the same for Pakistani women as for women of other ethnic groups

1.9. Thesis Structure

The thesis is organised in seven chapters. Chapter 2 states the research questions and provides a brief overview of the methods used to answer each of them. Chapter 3 presents a systematic review of literature relating to the rates of mental health service use for Pakistani women compared with women of other ethnic groups, the nature of Pakistani

women's social networks compared with women of other ethnic groups, and an assessment of the reasons for the underutilisation of mental health services by Pakistani women. Chapter 4 uses data from a nationally representative dataset (The UK Household Longitudinal Survey (UKHLS), also known as Understanding Society) to ascertain the nature of Pakistani women's social support networks, and assess how they compare with women of other ethnic groups. Chapter 5 uses data from another nationally representative dataset (Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC)) to examine the rates of usage of mental health services for Pakistani women compared with women of other ethnic groups, how four different aspects of social networks are related to mental health service use, and if the association between social networks and service use is different for Pakistani women compared with women of other ethnic groups. Chapter 6 tests whether there are indirect effects of social networks on service use via their impact on mental health, and whether this differs between Pakistani women and women of other ethnic groups. Chapter 7 concludes the thesis.

Chapter 2: Research Questions & Methodological Approach

This thesis uses a systematic review and statistical modelling of national survey datasets to fulfil the aims stated in Chapter 1. As a reminder, the four aims of this thesis are to:

i. Investigate the rates of mental health service use for Pakistani women, compared with women of other ethnic groups in England
ii. Investigate the nature of UK Pakistani women's social support networks, and how they compare with women of other ethnic groups
iii. Investigate the association between social networks and mental health service use, and if this association is the same for Pakistani women, compared with women of other ethnic groups
iv. Investigate if mental illness mediates the relationship between social networks and mental health service use, and if this mediation is the same for Pakistani women as for women of other ethnic groups

This chapter outlines the methods used to answer each of the research questions, and which aims these fulfil. The specific details of the methods, and datasets used (including variable construction and statistical modelling techniques) are given prior to the results in each of the Chapters, 3 to 6.

2.1. Systematic Review

In Chapter 3, a systematic review is used to ascertain the rates of mental health service use, and the nature of social networks for Pakistani women, compared with women from other ethnic groups. The review also investigates if Pakistani women's social networks are involved in help-seeking for mental distress. For this review, journal databases and grey literature were searched systematically for empirical (quantitative and

qualitative) studies. Data from these were extracted and synthesised to answer three research questions (stated below), relating to aims i, ii, and iii. A shorter version of this review has been published in the journal, Health and Social Care in the Community (Kapadia, Brooks, Nazroo, & Tranmer, 2015).

a) How does the usage of mental health services for Pakistani women in the UK compare with women of other ethnic groups?
b) What is the nature of Pakistani women's social networks, and how do they compare with women of other ethnic groups?
c) What are the reasons for the mental health services usage patterns of Pakistani women? Are social networks involved in the help-seeking and access process?

Prior to completing the systematic review, primary data collection had been considered for this thesis, as it was thought that there was a lack of data in the UK to investigate the associations between ethnicity, social networks and mental health service use. However, as a result of completing the systematic review, knowledge was acquired about the datasets available in the UK that would allow for the aims of this thesis to be tested empirically using secondary data. Hence, a secondary data analysis approach was used, as it was deemed important to use existing data to answer previously unanswered questions in the UK context. The datasets used and the questions answered are outlined in the next section.

2.2. Secondary Data Analysis

Chapter 4 provides an empirical assessment of the differences between Pakistani women's social support networks, compared with women of other ethnic groups. This is done using Wave 2 of the UK Household Longitudinal Survey (UKHLS), also known as

Understanding Society, collected between 2010 and 2012. This survey contains an ethnic minority boost sample (Berthoud, Fumagalli, Lynn, & Platt, 2009), with approximately 1,000 respondents recruited from five ethnic minority groups: Pakistani, Indian, Bangladeshi, Black Caribbean and Black African, as well as a large sample of White British respondents. Hence, this dataset allows robust analysis of ethnic differences. Latent Class Analysis (LCA, McCutcheon, 1987) was used to create classes of social support networks which were subsequently used as outcome variables in a multinomial logistic regression (with ethnic group as one of the covariates), to ascertain the differences in social support networks between Pakistani women and women of other ethnic groups. The analysis in Chapter 4 answers the research question outlined below, which relates to aim ii.

a) What is the nature of Pakistani women's social support networks, and how do they compare with women of other ethnic groups?

Chapter 5 proceeds to examine the relationship between different aspects of social networks, and how they are related to mental health service use, for Pakistani women compared with women of other ethnic groups. This is done using a large national (English) survey, Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC), collected in 2000. This survey also contains an ethnic minority boost sample, allowing aims i and iii of the thesis to be fulfilled. Logistic regression modelling, with mental health service use as an outcome variable, was used to ascertain the association between aspects of social networks, ethnic group, and using mental health services. Chapter 5 answers the research questions outlined below. Sections of the analysis presented in Chapter 5 have been used to draft a journal article, which is currently under review with the journal, Ethnicity & Health (Kapadia, Nazroo, & Tranmer, under review).

a) How does the use of mental health services for Pakistani women in England compare with women of other ethnic groups?
b) Are social networks associated with the use of mental health services?
c) Does this association differ for Pakistani women, compared with women of other ethnic groups?

Finally, Chapter 6 investigates *how* social networks are associated with mental health service use for Pakistani women, compared with women of other ethnic groups. Specifically, the analysis in this chapter tests if the effect of social networks on mental health service use is mediated by mental illness, and if this differs between Pakistani women and women of other ethnic groups. This is done using the same dataset as used for Chapter 5, and relates to the final aim (iv) of the thesis. A structural equation model was used to assess how mental health service use was directly and indirectly affected by aspects of social networks. The research questions that are answered in Chapter 6 are outlined below.

a) Is the influence of social networks on mental health service use mediated by mental illness?
b) Do the mediation effects differ for Pakistani women, compared with women of other ethnic groups

The next chapter presents the findings of the systematic review of the existing literature on Pakistani women's mental health service use, the nature of their social networks, and the potential reasons for their patterns of mental health service use.

Chapter 3: Pakistani women's use of mental health services & the role of social networks: a systematic review of quantitative and qualitative research

3.1. Introduction

The Delivering Race Equality (DRE) programme (Department of Health, 2005) aimed to provide equitable, non-racist mental health services to people in England and Wales. Its success appears to have been limited and after its end in 2010, some have argued that ethnic inequalities in mental health service provision remained (Bhui et al., 2012; Craig & Walker, 2012; Joint Commissioning Panel for Mental Health, 2014; RAWOrg (Rights and Wellbeing of Racialised Groups), 2011).

South Asian (Pakistani, Indian and Bangladeshi) women are one group for whom inequalities (low rates of usage of mental health services) are particularly evident (C. Cooper et al., 2013; J. Cooper et al., 2010). Within this group, Pakistani women may be particularly disadvantaged, as they have high levels of mental illness (Chaudhry et al., 2012; Fazil & Cochrane, 2003; Gater et al., 2009; Natarajan, 2006; Weich et al., 2004) but alongside low levels of service use. However, there is little robust evidence as typically the rates of usage for Pakistani women have been inferred from South Asian women. It is not appropriate to do this, as there are indications that Pakistani women have higher mental illness rates than Indian and Bangladeshi women (Natarajan, 2006; Weich et al., 2004), but lower usage of mental health services than Indian women (Care Quality Commission & National Mental Health Development Unit, 2010, 2011). In addition, in the UK, it has been established that mental health service use is higher for people living in areas of high economic deprivation (Goddard & Smith, 2001), and for those that are out of the labour market (Bebbington et al., 2003). Since, Pakistani and Bangladeshi women are more likely to be living in poverty (Jivraj & Khan, 2015; Nandi & Platt, 2010), and be out of the labour market (Kapadia, Nazroo, et al., 2015) than Indian women, it is reasonable to expect that

there may be important differences in their mental health service use rates. Consequently, it is worth considering women in each of these three South Asian groups (Pakistani, Indian and Bangladeshi) separately.

Existing research has suggested that Pakistani women may have low mental health service use because they are less likely to be referred to specialist mental health services by GPs (Burman, Chantler, & Batsleer, 2002) or when presenting at emergency service departments (J. Cooper et al., 2006), compared with White women. This may be due to cultural stereotypes that are held about South Asian women by some health professionals, who can be dismissive of the severity of mental distress in these groups, assuming that these problems are familial or related to culture, therefore perhaps not warranting specialist treatment (Batsleer et al., 2003; Burr, 2002). Further, NHS services may be inadequate in addressing specific religious and language needs for some women in this group (for example, a lack of interpreters for those who are not comfortable or confident in English, separate washing facilities in inpatient units for those who are Muslim) which may deter women from seeking help when needed (Bowl, 2007b; Chew-Graham, Bashir, Chantler, Burman, & Batsleer, 2002). There have also been concerns articulated through research with South Asian mental health service users, that Pakistani women may be fearful that confidentiality regarding their mental health may not be maintained especially if their GPs were from the same religious or ethnic background as themselves (Gilbert et al., 2004).

These reasons reflect the tendency of research in mental health service use to focus on how individuals (patients) in conjunction with systems (NHS) drive the outcomes of mental health care pathways. The social aspect of help-seeking; the way in which decisions and actions are influenced by the people closest to us (Gourash, 1978; Pescosolido, 1992, 2006, 2011) have largely been ignored in the UK context. Social networks may be particularly important for those groups who are alienated from mental health service systems, both in terms of their content (the people in them – friends, family), and their function (provision of support, exchange of information about illness and services).

However, there is a lack of information in the UK about the nature of Pakistani women's social networks, although some studies have suggested that Pakistani women are socially isolated and lack social support (Chaudhry et al., 2012; Gater et al., 2009). These studies have been done with small samples, contained to one geographical area (Manchester, England), and hence cannot be generalised to the population of Pakistani women in England. In addition, these studies have asserted low levels of social support for Pakistani women without appropriate comparison with other ethnic groups. Therefore whether the levels of social support are particularly low for Pakistani women is not known.

Further, very little attention has been paid to the influence (either positive or negative) of the content and function of social networks on the usage of mental health services for Pakistani women. This is an important omission, as research from other countries suggests that the explanations for low rates of mental health service use could be expanded upon and improved with reference to the content and function of social networks. Certainly, research in the US, Netherlands, and Puerto Rico has shown that people were less likely to use mental health services if they perceived high levels of support in their social networks (Golding & Wells, 1990; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008).

In order to clarify the rates of use of mental health services for Pakistani women, the nature of their social networks, and the possible influence of social networks on mental health service use, a systematic review of existing literature was undertaken. The research questions are outlined in the next section.

3.2. Research Questions

i. How does the usage of mental health services for Pakistani women in the UK compare with women of other ethnic groups?

ii. What is the nature of Pakistani women's social networks, and how do they compare with women of other ethnic groups?

iii. What are the reasons for the mental health services usage patterns of Pakistani women? Are social networks involved in the help-seeking and access process?

3.3. Methods

A systematic review was chosen as opposed to a traditional literature review because the evidence and research that are presented in the latter are usually theoretically driven; that is the studies that are chosen are done so in order to make particular points which reflect the author's theoretical stance (Petticrew & Roberts, 2006). In contrast, systematic reviews aim to seek out, aggregate and synthesise empirical evidence, from which theoretical models can be supported or refuted. Bias is removed in systematic reviews as all studies that meet pre-defined inclusion criteria, and only such studies, are included in the review. Further, each study that is included is subjected to quality assessment in order to establish its methodological rigour.

There have been previous systematic reviews looking at how access to mental health services differs by ethnicity (for example, Bhui et al., 2003; Lamb, Bower, Rogers, Dowrick, & Gask, 2012). However the aims of previous reviews have been rather different to the present review: Bhui and colleagues' review had a particular focus on mental health inpatient services and continuity of service contact for all ethnic minority groups, compared with the White population in the UK, whilst Lamb and colleagues' review covered access to mental health services in primary care only, for eight groups which were deemed 'hard to reach' (2012), one of which was ethnic minority people. Both of these

reviews reported on access to mental health services by Asian or South Asian patients, thereby losing information about the differences between the ethnic groups constituting the category 'South Asian'. Further, neither of these reviews reported on mental health service use for men and women separately. Therefore the aims of the current review were distinct from previous reviews, and it was able to provide new information that could inform further stages of the research conducted for this thesis.

The review included quantitative and qualitative research studies in order to increase the applicability of the review to policy and practice in this area. Reviews incorporating quantitative and qualitative research have become more widely used in the social sciences (Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), 2010). However, despite this growth in the use of different types of data to answer review questions, there is little published methodological literature on how to synthesise results within reviews that incorporate data generated by different research methods, in the most appropriate way (Kastner et al., 2012). Previous review authors have adjusted mixed review methodologies in order to meet the needs for specific reviews (e.g. Barley, Murray, Walters, & Tylee, 2011; M. Morgan, Kenten, Deedat, & On Behalf Of The Donate Programme Team, 2012).

Of the four different mixed review methods that have been clearly documented (a summary can be seen in Table 3.1), none were deemed as entirely appropriate to meet the objectives of the current review. It is important to state that it was not the intention of the review to generate a new theory of access to, or use of, mental health services, as there are many studies that have already done this (Dixon-Woods et al., 2005; Garrett et al., 2012; Gask et al., 2012; Lamb et al., 2012; Pescosolido, 1992). For this reason, review types that sought to establish new theoretical frameworks (i.e. critical interpretive synthesis, narrative synthesis, and realist synthesis) were not considered.

Table 3.1: Different types of 'mixed' systematic reviews

			Type of data/ information to be included				
Type of Review Method	**Main proponent**	**Key components**	**Quantitative**	**Qualitative**	**Mixed-methods**	**Non-research (e.g. newspapers)**	**Theoretical**
Critical Interpretive Synthesis	Dixon-Woods et al., 2005	Area of enquiry tentatively defined. Extensive but not exhaustive searching. Sampling of resulting literature. Appraisal and critique of included papers. Meta-ethnographic methods use to synthesise findings to produce new theory in form of synthetic constructs.	✓	✓	✓	✓	✓
Mixed-Methods Systematic Review	Thomas et al., 2004	Systematic search of literature. Synthesise quantitative findings using meta-analysis. Synthesise qualitative findings using meta-ethnography. Integrate/ combine results of quantitative and qualitative syntheses.	✓	✓			
Narrative synthesis	Popay et al., 2006	Developing a theory of how interventions work. Developing a preliminary synthesis. Exploring relationships in the data. Assessing the robustness of the synthesis.	✓	✓	✓	✓	✓
Realist synthesis	Pawson, Greenhalgh, Harvey, & Walshe, 2005	Typically used for complex healthcare interventions. Clarify scope of review. Search for evidence. Appraise studies and extract data. Synthesise evidence and draw conclusions. Develop theory of what works for 'who' and in 'what context'.	✓	✓	✓	✓	✓

The mixed-methods systematic review as proposed by Thomas and colleagues (2004) was considered as a possibility. However, it did not allow for findings from quantitative studies to be synthesised in a way other than meta-analysis. Therefore, a new method named "mixed systematic review" was used, which evaluated and synthesised research evidence from quantitative, qualitative and mixed-methods research studies. The method was new in the sense that it allowed data from any high quality quantitative study to be extracted and incorporated into the review (not only via meta-analysis). This was especially important for data from studies reporting on mental health service use rates, as these typically use administrative or observational data. The review incorporated evidence from peer reviewed journals and grey literature (e.g. research reports from government organisations and unpublished theses).

3.3.1. Inclusion and Exclusion Criteria

The inclusion criteria were: studies published from 1960 up to the end of March 2014, pertaining to Pakistani or South Asian women, on the subject of either access to, or usage of, mental health services or the nature of social networks, conducted in the UK and written in English. Only studies published after 1960 were included due to the dates of Pakistani migration to the UK and the low likelihood of studies pertaining to mental health service use in Pakistani women being published before this date. Studies from other countries were excluded due to the differing migration histories, socioeconomic positions, health care structures, and mental illness rates of Pakistani women in those countries. Papers that were theoretical in nature were excluded. Studies were excluded if they investigated access to child and adolescent mental health services, as the help-seeking process that parents undertake on behalf of children is not comparable to the process in adult women. Papers related to dementia or learning disability services were excluded for similar reasons. Finally, studies investigating antidepressant or other psychotropic

medication use in Pakistani women that did not contain an element on access to, or use of, services were also excluded.

3.3.2. Data Sources and Search Strategy

In order to answer the research questions, a range of sources were used. The primary source of data was peer reviewed journal articles, but, in addition, this review also integrated unpublished theses and grey literature (e.g. research reports from charities and government organisations). Databases and websites that were searched are shown in Table 3.2. The Cochrane Library was not searched; this database typically holds systematic reviews of medical or psychosocial interventions that were not applicable to the current review.

Table 3.2: Sources used in the review.

Type of Source	Databases
Electronic Databases (peer reviewed articles)	Applied Social Sciences Index and Abstracts (ASSIA) Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus) EMBASE Health Management Information Consortium (HMIC) International Bibliography of the Social Sciences (IBSS) MEDLINE PsycINFO Social Sciences Abstracts Social Sciences Citation Index Sociological Abstracts
Grey Literature	OpenGrey Social Care Online Index to Theses Electronic Theses Online Services (ETHOS) The Health and Social Care Information Centre Website (HSCIC) Association of Health Observatories Website

A list of search terms was compiled by drawing upon other systematic reviews in this area and the author's knowledge of previous research. The search terms were over inclusive (more sensitive than specific). Initial searches were tested in Medline and revised (see Box 3.1). Searches were adapted for each database. The Health and Social Care

Information Centre (HSCIC) and Association of Health Observatories websites were searched manually. Searches were undertaken in April 2014.

Box 3.1: Search terms for the review

Mental Health OR mental illness OR health service* OR healthcare disparit* OR health disparit* OR health equit* OR health inequit* OR health equal* OR health inequal* OR Health Care Services* OR Health Care Utilization* OR psychiatr* OR Health Care Psychology* OR access* OR health access* OR healthcare access* OR care path* OR help seek* OR service barrier* OR barrier to service* OR social network OR family network OR Social Support OR family support OR network analysis OR support network OR social capital AND ethnic* OR south asia* OR asian* OR pakistan* OR rac* OR Muslim* OR bme* OR minorit* AND uk* OR united kingdom* OR britain* OR Great Britain OR England

The searches yielded 27,880 papers. Results were imported into EPPI-Reviewer 4, a program designed specifically for systematic review screening (Thomas, Brunton, & Graziosi, 2010). Duplicates were removed, leaving 18,459 documents. The number of papers that resulted from the searches was much larger than has been reported in other systematic reviews relating to health services (e.g. Bhui et al., 2003: 545 papers; Lamb et al., 2012: 7370; Morgan et al., 2012: 1461). However, the decision to be over-inclusive was intentional, in order to identify all relevant studies. Screening was undertaken to select articles that were able to answer the research questions, leaving 127 papers. A PRISMA (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009) diagram of the screening and eligibility process is shown in Figure 3.1).

3.3.3. Critical Appraisal

Each of the 127 papers was critically appraised by two reviewers: the author, and Dr Helen Brooks, Research Fellow in the School of Nursing, Midwifery and Social Work at The University of Manchester. Disagreements on inclusion (n=5/127), were resolved by a third reviewer (Professor James Nazroo, the author's PhD supervisor). Different quality

assessment tools were used for each methodologically distinct study. Mixed-methods studies were not excluded, but there were not any mixed method studies that were deemed to be of sufficient quality to be included. For quantitative papers, the Study Quality Tool (Zaza et al., 2000) was used; for qualitative papers, the Critical Appraisal Skills Programme (CASP) Qualitative Checklist (CASP, 2014a); and for systematic reviews, the CASP Systematic Review Checklist (CASP, 2014b). A copy of each of these is provided in Appendices 3.1 to 3.3. These tools were used as guides to assess the quality of the studies on which judgements were made about their inclusion. Papers that were appraised as poor on research design, inappropriate in the choice of methods or lacking robust analysis were excluded. During critical appraisal, posters and conference paper abstracts were excluded, but where possible, published papers referring to presentations were sought out. It was not possible to find one thesis that explored the health needs of Asian women in Manchester, despite making enquiries with the awarding university and the author.

At this stage 106 papers were excluded (see Figure 3.1) as they were irrelevant to the research questions. Most papers (64%) were excluded because they did not analyse data by Pakistani ethnicity, gender or both. Nine papers (8%) were excluded due to poor quality (lack of specific research questions, poor research design or unsound data analysis). Six papers that documented the results of the Count me in Censuses 2005 to 2010 were included, despite providing estimates of mental health inpatient use that included people who were under the age of 18. This was because those aged under 18 only constituted between 1 and 2.9% of inpatients in the years 2005 to 2010.

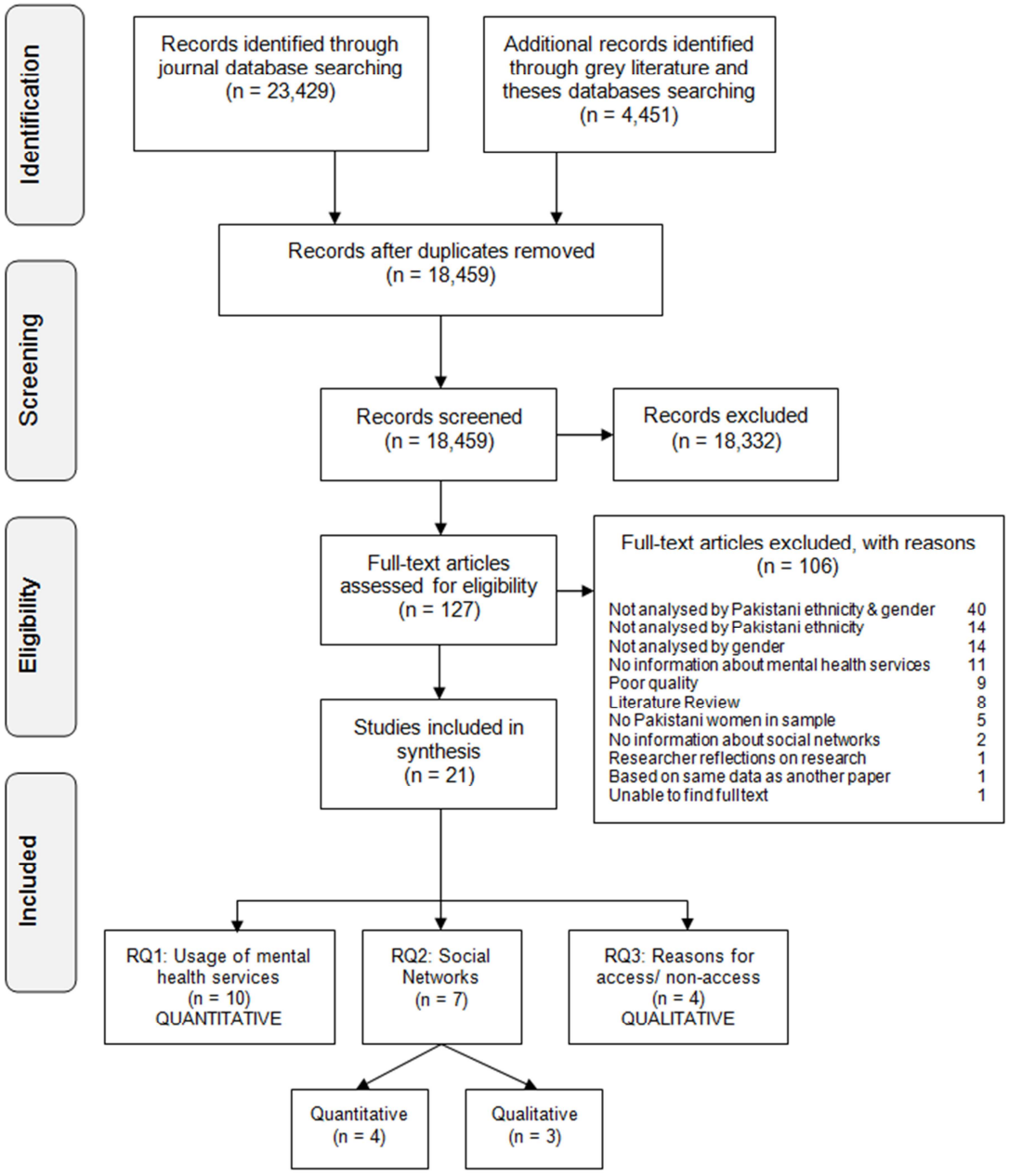

Figure 3.1: Flow diagram showing stages of the review process using PRISMA reporting (Moher et al., 2009)

The remaining 21 papers were categorised according to which research questions they addressed. Papers were published between 1999 and 2013, except one (published in 1977). Ten of these related to research question one (comparison of the use of mental health services between Pakistani women and women of other ethnic groups) and were quantitative in nature. Seven papers were relevant to research question two (the nature of

Pakistani women's social networks); three were qualitative and four quantitative. Data were synthesised separately for quantitative and qualitative studies, and then compared and contrasted. Four studies related to the final research question (all qualitative).

3.3.4. Data Extraction and Synthesis

Due to the differing nature of types of evidence collated in the review, it was necessary to extract different types of data. For quantitative studies rates of usage, odds ratios, standardised risk ratios or proportions were extracted, whereas for qualitative studies main themes and interviewee quotes were extracted. Information relating to study characteristics was extracted for all studies (number of participants, number of Pakistani female participants, age range, aims of the study, the target sample, geographical location, and research method). For qualitative studies that had conducted research with people from a range of ethnic groups, data relating to Pakistani women were extracted if possible.

Once the data were extracted, the results were synthesised within each research question. Synthesis refers to the 'bringing together' of data from different sources (Mays, Pope, & Popay, 2005). Although the current review was not a narrative synthesis, elements of this method, and specific tools advocated by Popay and colleagues (Popay et al., 2006) were used, as these were helpful for organising the synthesis of quantitative and qualitative evidence. The elements used were developing a preliminary synthesis, exploring relationships in the data and assessing the robustness of the synthesis (Popay et al., 2006; Pope, Mays, & Popay, 2007); the specific tools used for each element are shown in Table 3.3. Separate (three) Excel spreadsheets were used to record the studies included for each research question (*textual description*). The findings from each study were recorded in separate cells; quantitative results from similar studies were *grouped* and *tabulated* in order to compare findings. For qualitative studies, highlighters were used to colour code according to similarity of findings (*thematic analysis*). These tools aided the synthesis for the systematic review.

Table 3.3: Narrative Synthesis: specific tools used in the review (adapted from Popay et al., 2006)

Element of Review	Description	Tool
Developing a preliminary synthesis	To organise findings to describe patterns : direction and magnitude of effects	Textual descriptions of studies Groupings and clusters Tabulation Translating data: thematic analysis
Exploring Relationships in the data	To consider factors that explain differences in effects across studies	Moderator variables and sub-group analysis Idea webbing and conceptual mapping
Assessing robustness of synthesis	To provide evaluation of quality of evidence for drawing conclusions about effect size and generalisation to other populations/ contexts	Reflecting critically on the synthesis process

3.4. Results

3.4.1. Pakistani women's use of mental health services, compared with women of other ethnic groups

Ten quantitative papers provided data that were relevant to this research question. Seven related to usage of mental health inpatient services. One provided usage rates of outpatient services, one reported on consultations with doctors for stress-related or emotional problems, and one provided usage rates of both outpatient mental health services and consultations with doctors (see Table 3.4).

Table 3.4: Summary of studies providing data on rates of usage of mental health services (n=10)

First Author, date	Location	Sample size (Age)	Pakistani Women N (%)	Aims	Sample	Research Method
Care Quality Commission & National Mental Health Development Unit, 2010	England & Wales	32,799 (All ages)	114 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Care Quality Commission & National Mental Health Development Unit, 2010	England & Wales	31,786 (All ages)	110 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Commission for Healthcare Audit and Inspection, 2008	England & Wales	31,020 (All ages)	121 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Commission for Healthcare Audit and Inspection, 2007	England & Wales	31,187 (All ages)	85 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Commission for Healthcare Audit and Inspection, 2007	England & Wales	32,023 (All ages)	104 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Commission for Healthcare Audit and Inspection, 2005	England & Wales	33,785 (All ages)	90 (0.3)	To obtain accurate figures relating to patients in mental health wards by ethnic group	Mental health unit inpatients	Census
Cochrane, 1977	England & Wales	N/R (15+)	N/R*	To report admissions to mental hospitals in 1971, by country of birth	Admissions to mental health hospitals in 1971	Survey
Glover, 2009	England	N/R (18-64)	N/R*	To examine the extent to which IAPT services have been used for ethnic minority groups	Patients using Crisis Resolution Home Treatment, Early Intervention, Assertive Outreach, and IAPT services	Survey
Lloyd, 2002	England	4,281 (16-74)	387 (8.0)	To investigate the differences in mental health service use between ethnic groups	Household residents (sampled from The Health Surveys for England 1998 & 1999) with ethnic minority boost sample	Survey
Bajekal, 2001	England	16,484 (16-74)	1,028 (6.2)	To investigate the differences in health service use and prescribed medicines between ethnic groups	Household residents, with ethnic minority boost sample	Survey

*Not reported

For the papers that were included, there were differences in the way that rates could be interpreted. The Count me in Censuses (which accounted for six out of seven papers reporting on usage of inpatient services) provided counts of people who were using mental health inpatient services on census day (31st March). This differed from the paper by Glover and Evison (2009), which provided data on usage of mental health outpatient services over 12 months. Both used NHS administrative data.

The community surveys (Health Survey for England (HSE) 1999 and Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC)) provided figures for consultations with GPs for mental health problems, based on participant self-report and related to the previous 6 (EMPIRIC) or 12 (HSE 1999) months. The number of ethnic groups used for classification in each study also varied. The Count me in Censuses and the report by Glover and Evison (2009) used a 16 category ethnic group classification devised by the Office for National Statistics (ONS) (Table 3.5 lists all of these groups). EMPIRIC and the HSE 1999 used 6 groups: White, Irish, Black Caribbean, Indian, Pakistani, and Bangladeshi.

There were papers based on two sources of data, perhaps considered to be the most comprehensive sources on usage of mental health services in the UK, that were excluded from the review. The first was the Adult Psychiatric Morbidity Surveys (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2009; Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2001), because Pakistani women were not analysed as a separate ethnic group. The second was The Health and Social Care Information Centre's Annual Mental Health Bulletins (Community and Mental Health Team: Health and Social Care Information Centre, 2013), because rates were not provided by gender.

Inpatient Services. The Count Me in Censuses showed a consistent higher rate (standardised for age and sex) of mental health inpatient use for women from Black African, Black Caribbean, Mixed White & Black Caribbean, Mixed White & Black African, Other White, Other Black, Other Asian and Other ethnic groups, compared with

Pakistani women between 2005 and 2010 (see Table 3.5). There was no difference in the inpatient rates between Pakistani women, and Chinese, Indian or Bangladeshi women, from 2005 to 2010. Mixed White and Asian women did not have different rates to Pakistani women apart from in 2005 and 2010. White Irish women had higher rates than Pakistani women except for in 2006 and 2008.

White British women's rates were not different from Pakistani women's between 2005 and 2008. However White British women had higher rates than Pakistani women in 2009 and 2010. One possible reason for the change in pattern is the change of denominator used to calculate standardised ratios in 2009 and 2010. Between 2005 and 2008, 2001 Census population figures were used as an estimation of the total population (used as denominators), and age and sex standardised rates were calculated with these data. It is likely that these denominators were lower than the actual numbers of Pakistani women in the population at the time, due to increases in population between 2001 and 2008. England and Wales Census data show that the number of Pakistani females increased by 56% (195,728 females) between 2001 and 2011[1]. At least some of this change will have occurred between 2001 and 2005, and 2005 and 2008, suggesting that the inpatient rates for Pakistani women from 2005 to 2008 were overestimated. (Of course, this would be the case for all ethnic groups that increased in size between 2001 and 2005). In 2009 and 2010, the 2007 Office of National Statistics Mid-Year Estimates (ONS MYE) were used as estimates of the population size; the rates for these years are more likely to be a true reflection of usage than rates provided for 2005 to 2008. However the population is still likely to have grown between 2007 and 2009, hence the use of 2007 population estimates for 2009 and 2010 standardised rates is still problematic.

[1] Census data were downloaded from www.nomisweb.co.uk (2015). Table T13 (Theme table on ethnicity) was used for 2001 data, and Table DC2101EW (Ethnic group by sex by age) for 2011 data.

Table 3.5: Rates of usage of mental health inpatient units for women by ethnic group.
Data for Pakistani women are in the top row, followed by ethnic groups sorted ascending by 2010 rate of usage of services. Values are standardised rates (95% confidence intervals) (Source: Count me in Censuses 2005 – 2010).

	Count me in 2005 (Denominator: Census 2001)	**Count me in 2006 (Denominator: Census 2001)**	**Count me in 2007 (Denominator: Census 2001)**	**Count me in 2008 (Denominator: Census 2001)**	**Count me in 2009[a] (Denominator: ONS 2007 MYE[b])**	**Count me in 2010 (Denominator: ONS 2007 MYE)**
	SR (95% CI)	**SR (95% CI)**	**SR (95% CI)**	**SR (95% CI)**	**SR (95% CI)**	**SR (95% CI)**
Pakistani	75 (60 – 92)	94 (76 – 113)	76 (61 – 94)	109 (90 – 130)	70 (57 – 84)	65 (53 – 79)
Chinese	79 (57 – 107)	79 (56 – 108)	79 (56 – 108)	88 (63 – 119)	49 (35 – 67)	43 (30 – 59)
Indian	76 (65 – 89)	71 (60 – 83)	68 (57 – 81)	75 (64 – 88)	59 (51 – 69)	66 (56 – 76)
Bangladeshi	98 (71 – 133)	116 (85 – 155)	112 (81 – 149)	126 (94 – 166)	83 (61 – 110)	82 (60 – 109)
White British	94 (92 – 95)	93 (91 – 95)	92 (91 – 94)	91 (89 – 93)	95 (93 – 96)	94 (93 – 96)
Other	214 (176 – 257)	216 (176 – 261)	233 (192 – 280)	184 (148 – 227)	121 (98 – 148)	110 (88 – 136)
White Irish	143 (128 – 159)	116 (102 – 131)	111 (97 – 127)	128 (113 – 145)	133 (117 – 151)	122 (106 – 140)
Mixed White & Asian	135 (95 – 187)	107 (71 – 156)	127 (87 – 179)	175 (127 – 235)	116 (83 – 156)	124 (90 – 166)
Other White	138 (126 – 150)	162 (149 – 176)	187 (173 – 203)	184 (170 – 199)	119 (109 – 130)	129 (118 – 141)
Other Asian	206 (166 – 253)	220 (177 – 270)	214 (172 – 264)	189 (149 – 236)	130 (103 – 162)	136 (107 – 169)
Other Mixed	221 (167 – 288)	218 (162 – 286)	209 (155 – 277)	184 (134 – 248)	249 (197 – 309)	213 (165 – 270)
Black African	223 (193 – 256)	238 (206 – 273)	251 (218 – 287)	250 (217 – 287)	202 (178 – 228)	219 (194 – 247)
Mixed White & Black African	203 (130 – 303)	358 (255 – 490)	220 (141 – 328)	367 (262 – 500)	143 (90 – 214)	259 (186 – 351)
Mixed White & Black Caribbean	269 (213 – 336)	302 (239 – 376)	330 (265 – 407)	393 (321 – 476)	244 (197 – 299)	274 (223 – 333)
Black Caribbean	289 (262 – 319)	287 (259 – 317)	307 (277 – 339)	378 (345 – 413)	293 (266 – 322)	306 (277 – 336)
Other Black	827 (697 – 975)	857 (719 – 1,014)	743 (614 – 890)	580 (467 – 713)	475 (385 – 579)	314 (240 – 403)

[a] Rates for 2009 are for England only, as 2007 mid-year estimates (used as the denominator) were not available for Wales when data were produced by the Care Quality Commission (Care Quality Commission & National Mental Health Development Unit, 2010).
[b] Office of National Statistics Mid-Year Estimates

One other paper was able to provide information on rates of admission to mental health hospitals (Cochrane, 1977). The way in which Pakistani was defined in this paper (born in Pakistan) differed from how it was defined in the Count me in Censuses (self-assigned ethnicity). For women born in Pakistan the age and sex standardised rate of admission (using 1971 UK Census for denominators) was 374 per 100,000. This was the lowest admission rate out of any country of birth; the other countries were England & Wales (combined), Scotland, Northern Ireland, Ireland, West Indies, India, Germany, Italy, Poland, and United States of America.

The papers reporting on inpatient mental health services did not adjust the rates for level of mental illness, nor for any socioeconomic factors.

Outpatient services. Only two papers provided rates of usage of outpatient mental health services. One was a nationally representative English community survey (Ethnic Minority Psychiatric Rates in the Community (EMPIRIC), Lloyd & Fuller, 2002). According to this survey, there was no difference in the (weighted[1]) percentages of Pakistani women (1%) and White, Irish, Bangladeshi and Indian women who had seen a Community Psychiatric Nurse (CPN)[2] (1%) in the preceding 6 months. The percentage for Black Caribbean women was 2%. Black Caribbean (4%), White (3%) and Irish (3%) ethnic groups had slightly higher percentages of women that had seen a counsellor or psychologist within the last 6 months, compared with Pakistani women (2%). Indian women had the same percentage as Pakistani women, and the percentage for Bangladeshi women was lower at 1%. This report did not provide confidence intervals for estimates, therefore the statistical difference between outpatient use for Pakistani women, and women of other ethnic groups could not be assessed.

[1] EMPIRIC employs a complex survey design. Percentages are weighted to account for the differing probabilities of selection of ethnic minority groups, and non-response to the survey.
[2] A CPN typically works in a Community Mental Health Team (outpatient services) and is provided for people with moderate to severe mental illness to support them after release from an inpatient setting or to enable them to live in the community without resorting to inpatient services.

The other paper (Glover & Evison, 2009) provided rates of access to the following NHS services: Crisis Resolution Home Treatment[1] (CRHT), Early Intervention[2] (EI), Assertive Outreach[3] (AO) and Improving Access to Psychological Therapies[4] (IAPT) Services. The rates were provided for those aged 18 to 64 years of age, and used 2007 Office of National Statistics (ONS) Mid-Year Estimates to provide age specific population rates[5] (18 to 64 years for all services except for Early Intervention which used 14 to 35 years). Data were collected between March 2008 and March 2009. Rates of use for each service by ethnic group are shown in Table 3.6.

Pakistani women had lower rates of use of CRHT services (67/100,000, CI = 57 – 77) than women from White British, Black Caribbean, Black African, Mixed White & Black Caribbean, Other White, Other Black, Other Asian and Other groups. Indian and Chinese women had lower rates than Pakistani women, and there was no difference in rates between Pakistani and Bangladeshi, White Irish, Mixed White & Black African, Mixed White & Asian, and Mixed White & Black Caribbean women.

Assertive Outreach rates were similar for Pakistani women (30/100K, CI = 24 – 37) and women from White British, Indian, Bangladeshi, Mixed White & Asian, Other White, and Other groups. Chinese women had lower rates, and Black African, Black Caribbean, White Irish, Mixed White & Black African, Mixed White & Black Caribbean, Other Black, Other Asian, and Other Mixed women had higher rates.

[1] This service provides intensive support at home for mental health patients, as an alternative to inpatient care.
[2] This service is offered to patients who are suffering from a first episode of psychosis and is generally offered to patients aged 14 to 35 years.
[3] This service provides support to people with severe and enduring mental health problems, who have usually been in contact with mental health services for long periods of time.
[4] This service provides short term talking therapies for people with anxiety and/ or depression.
[5] This is not a standardised rate. Standardisation was not performed by the authors because the ages of service users were not available in the dataset.

Table 3.6: Rates of usage of outpatient mental health services for women by ethnic group.
Data for Pakistani women are in the top row, followed by ethnic groups sorted ascending by IAPT entry rate. Values are population rates (95% confidence intervals), figures rounded to nearest integer. (Source: Glover & Evison, 2009)

	Crisis Resolution Home Treatment (CRHT)	**Early Intervention (EI)**	**Assertive Outreach (AO)**	**New Psychological Therapies provided under Improving Access to Psychological Therapies (IAPT)**	
				Referral	**Entry**
	Population rate (CI)	**Population rate (CI)**	**Population rate (CI)**	**Population rate (CI)**	**Population rate (CI)**
Pakistani	67 (57 – 77)	110 (95 – 125)	30 (24 – 37)	213 (162 – 275)	165 (120 – 221)
Chinese	28 (21 – 38)	43 (31 – 57)	9 (5 – 15)	73 (40 – 122)	83 (47 – 135)
Indian	39 (34 – 45)	47 (39 – 56)	26 (21 – 31)	180 (142 – 224)	178 (140 – 222)
Black African	123 (110 – 138)	192 (170 – 215)	74 (64 – 85)	180 (135 – 234)	183 (138 – 237)
Bangladeshi	79 (63 – 98)	138 (114 – 166)	29 (19 – 41)	161 (95 – 254)	188 (116 – 287)
Black Caribbean	130 (150 – 146)	197 (168 – 228)	186 (168 – 205)	263 (206 – 331)	296 (235 – 368)
White British	89 (88 – 91)	76 (74 – 79)	37 (36 – 38)	457 (445 – 470)	297 (287 – 307)
White Irish	90 (76 – 104)	59 (39 – 86)	47 (38 – 58)	257 (193 – 337)	301 (231 – 386)
Other Asian	163 (140 – 189)	234 (198 – 275)	79 (63 – 98)	298 (205 – 418)	307 (212 – 428)
Other	137 (119 – 157)	196 (168 – 227)	38 (29 – 49)	371 (292 – 466)	311 (239 – 399)
Mixed White & Black African	103 (70 – 147)	135 (90 – 196)	96 (64 – 139)	322 (161 – 577)	322 (161 – 577)
Mixed White & Asian	49 (33 – 69)	72 (50 – 100)	34 (21 – 52)	191 (102 – 327)	339 (215 – 508)
Other Mixed	119 (92 – 151)	191 (151 – 239)	64 (45 – 89)	673 (489 – 904)	342 (463 – 868)
Mixed White & Black Caribbean	88 (66 – 114)	167 (135 – 204)	123 (97 – 154)	309 (194 – 468)	379 (250 – 552)
Other Black	475 (407 – 551)	1004 (877 – 1145)	478 (409 – 554)	281 (150 – 481)	389 (231 – 616)
Other White	90 (83 – 98)	74 (65 – 83)	36 (31 – 40)	322 (285 – 364)	404 (361 – 450)

Pakistani women had higher rates of usage of Early Intervention services (110/100K CI = 95 – 125) compared with White British, White Irish, Indian, Chinese, and Other women. Rates were similar between Pakistani and Bangladeshi, Mixed White & Black African, and Mixed White & Asian women. Rates were higher for Black Caribbean, Black African, Mixed White & Black Caribbean, Other White, Other Black, Other Asian, Other Mixed, and Other groups.

Pakistani women were less likely to be referred to IAPT services (213/100K, CI = 162 – 275) compared with women in White British, Other White, Other Mixed, and Other ethnic groups. There was no difference in referral rates between Pakistani women and the other ethnic groups expect for Chinese women who had lower rates. Pakistani women were less likely to enter treatment (165/100K, CI = 120 – 221) than White British, White Irish, Other White, Black Caribbean, Mixed White & Black Caribbean, Other Black, Other Mixed and Other women. There was no difference in entry rates to IAPT between Pakistani women and the other ethnic groups.

At the time of data collection, IAPT services were available to only 9% of the England population. Further, ethnicity data were only available for 65% of people using these services. This is much lower than the level of ethnic reporting for the other services commented on in this paper (CRHT, ethnic reporting complete for 91% patients; Early Intervention 92.5%; Assertive Outreach 97.9%). The authors state that participants, for whom ethnicity was not known, were excluded from the analyses, but there was no information provided on whether some ethnic groups were more or less likely to have their ethnicity data recorded. Therefore the impact of missing ethnicity data on the IAPT figures is unknown. The authors also calculated the expected rates of IAPT referral and entry given the rates of mental illness from the nationally representative community survey, EMPIRIC (Sproston & Nazroo, 2002). They concluded that referral rates to treatment for Pakistani women were less than would be expected from the mental illness prevalence rates (Referral Ratio of Observed to Expected Cases = 43.7%). Referral rates were also

lower than expected for Indian, Black Caribbean, and White Irish women. They were higher than expected for White British, and as expected for Bangladeshi women.

Consultation of GP for mental health problems. The Health Survey for England 1999 (Bajekal, 2001) showed that there was no difference in GP consultations for being anxious or depressed between Pakistani women (age Standardised Ratio [SR] = 1.21, SE = 0.11) and women in the general population (SR = 1). The general population sample consisted mainly of White women[1]. There was no difference in the rate of GP consultations between Pakistani and Irish, Black Caribbean or Indian women. Bangladeshi and Chinese women had lower rates of consultation than Pakistani women. However, according to estimates from EMPIRIC (Lloyd & Fuller, 2002), Pakistani women were less likely to have consulted a doctor for emotional or stress-related problems (age Standardised Risk Ratio [SRR] = 0.60, SE = 0.16) compared with White women (SRR = 1). There were no differences in consultations between Pakistani women and women of other ethnic groups.

None of the papers synthesised for this research question adjusted mental health service use rates for the level of mental illness within each ethnic group. Mental illness is known to be one of the biggest predictors of mental health service use. This omission means that the ethnic differences in mental health service usage rates may have been underestimated, especially for Pakistani women, since their rates of mental illness are higher than for women from many other ethnic groups (Natarajan, 2006; Weich et al., 2004).

3.4.2. Pakistani women's social networks, compared with women of other ethnic groups

For this research question there were four quantitative studies and three qualitative studies that were synthesised. The quantitative papers were comparative in nature,

[1] 91.3% of women aged over 16 years in the general population sample were White, 4.7% were Irish, 1.4% Indian, 1.3% Black Caribbean, 0.9% Pakistani, and 0.5% Bangladeshi.

investigating social support of ethnic minority women compared with the White majority population. For the synthesis, where possible, figures are reported comparing Pakistani women to women of other ethnic groups. Where this was not possible, only comparisons between Pakistani women and the White majority group are provided. The qualitative papers focussed on Pakistani women only (see Table 3.7). The results from papers were synthesised under two themes: network content (who was in women's networks), and network function (what the network did for women).

Network Content. Stansfeld and Sproston (2002) found that Pakistani women were more likely to have seen a greater number of relatives in the past month (Ratio of Means (RoM) = 1.33, SE = 0.12) than White women (RoM = 1) but there was no difference between Pakistani women and women in the other ethnic groups included in the survey (Irish, Black Caribbean, Bangladeshi and Indian). Pakistani women were less likely to have seen friends in the past month (RoM = 0.46, SE = 0.07) than White (RoM = 1), White Irish (RoM = 0.93, SE = 0.11), and Black Caribbean (RoM = 0.81, SE = 0.1) women. There was no difference in the number of friends seen between Pakistani, and Bangladeshi and Indian women.

Campbell and McLean (2003) found that participants in their study preferred to make friends with other Pakistani or South Asian people. However, the extent to which this was a choice for women was constrained by two factors: firstly several of the Pakistani-born women in the sample "lived in households in which women did not leave the home unaccompanied", and secondly women who had poor English language skills "were limited in their interaction with non-Pakistani people" (Campbell & McLean, 2003: 14). One paper also commented that many Pakistani women did not have networks that were independent of their husbands' (Rodriguez, 2007).

Table 3.7: Summary of studies relating to social networks of Pakistani women (n=7)

First author, date	Location	Sample size (Age)	Pakistani women N (%)	Aims	Sample	Research Method
Platt, 2009	England & Wales	10,028 (16-65)	414 (4.1)	To explore the extent to which social activity in England and Wales varies by ethnic group and whether risks of social isolation are higher for some groups than others	Household residents, with ethnic minority boost sample	Survey
Natarajan, 2006	England	10,114 (16+)	795 (7.9)	To explore the differences in general health, acute sickness, longstanding illness, psychosocial measures (GHQ12 and perceived social support) and prescribed medicines by ethnicity.	Household residents, with ethnic minority boost sample	Survey
Stansfeld, 2002	England	4,281 (16-74)	387 (8.0)	To examine the levels of support across different ethnic groups and to investigate whether this contributes to differences in psychiatric morbidity.	Household residents (sampled from The Health Surveys for England 1998 & 1999) with ethnic minority boost sample	Survey
Calderwood, 2001	England	16,484 (16-74)	1,028 (6.2)	To explore the differences in self-reported longstanding illness and acute sickness, self-assessed general health and two measures of psychosocial health, the GHQ12 and perceived social support.	Household residents, with ethnic minority boost sample	Survey
Gask, 2011	East Lancashire	15 (23-73)	15 (100)	To examine the processes involved in why and how British Pakistani women fail to recover from depression and remain persistently low in mood.	Pakistani women living in the local area with a diagnosis of depression from their GP	Qualitative Interview
Rodriguez, 2007	North London	10 (40-59)	10 (100)	To address the issue of migration as a factor of change in the gendered division between private and public spaces.	Pakistani women living in the local area, originating from Punjab or Sindh metropoles of Pakistan, with secondary school education or higher	Qualitative Interview
Campbell, 2003	South England	26 (15-66)	13 (50.0)	To examine potential obstacles for Pakistani people in England to participate in local initiatives to reduce health inequalities	Pakistani Kashmiri residents in the local area	Qualitative Interview

A strong sense of social isolation emerged as a core theme in some papers. Gask and colleagues (2011) found that social isolation was a feature of the experiences of Pakistani depressed women interviewed in their study. This was perhaps to be expected given the nature of the sample but it was also a feature of Pakistani women's networks in non-clinical samples. For example, Platt (2009) using the data from the 2001 Citizenship Survey found that 17% of Pakistani women (the highest of any ethnic group: White British, Black Caribbean, Black African, Indian, Bangladeshi and Pakistani) were classified as socially isolated (defined as receiving infrequent visits, making infrequent visits, going out infrequently and low contact with clubs and organisations).

Platt's (2009) study also showed that Pakistani women were less likely to be involved in clubs and organisation than White British women (probit coefficient = 0.409, SE = 0.144, $p<0.05$). Participants in Campbell & McLean's (2003) study spoke of how involvement in community organisations was seen as a "white thing" and if they were seen to be participating in such groups, they might be accused of "acting white" (p.17) by people from their own ethnic group. The authors reported that Pakistani-born women were often "isolated from mainstream English life" (p.14) and whilst they were aware of the existence of women's groups and English classes, they rarely attended them. This was in contrast to younger England-born Pakistani women who were more likely to be involved in community groups that they had become aware of through schools or colleges. Rodriguez (2007) reported that Pakistani women attended community centres and had built 'social women-centered (sic) networks" (p.106). However, this study consisted of Pakistani women born in the Punjab or Sindh metropolitan areas, all with relatively high levels of education (secondary school or college education) sampled in "mixed British and immigrant neighbourhoods" (p.98). Their experiences are likely to be quite different from those of the Pakistani Kashmiri women sampled by Campbell & McLean (2003) who were living in deprived (in the lowest quintile), multi-ethnic neighbourhoods (at least 30% Pakistani); this may account for the difference in these findings.

Network Function. The Health Survey for England (HSE) 1999 (Calderwood & Tait, 2001) found that 27% of Pakistani women (Standardised Risk Ratio compared with the general population (SRR) = 2.28, SE = 0.23) perceived a severe lack of social support from their closest person. This was greater than Black Caribbean women (SRR = 1.33, SE = 0.14) and Irish women (SRR = 0.86, SE = 0.12). There was no difference between Pakistani and Indian, Bangladeshi and Chinese women. Similar results were also reported in Natarajan's paper (2006), using the Health Survey for England (HSE) 2004 (Sproston & Mindell, 2006), where 30% of Pakistani women (SRR = 2.47, SE = 0.33) perceived a severe lack of social support (SRR (compared with the general population) = 2.47, SE = 0.33) which was higher than for Irish women (11%, SRR = 0.84, SE = 0.15). There was no difference in severe lack of social support between Pakistani and Black Caribbean, Black African, Indian, Bangladeshi and Chinese women.

Stansfeld and Sproston's paper (2002) from the EMPIRIC study found that Pakistani women reported higher levels of negative aspects of support (SRR = 1.35, SE = 0.11) than White women (SRR = 1). Pakistani women were less likely to have high levels of negative support than Bangladeshi women, and the levels were the same between Pakistani women and Irish, Indian and Black Caribbean women. Pakistani women were less likely to report low levels of practical support (SRR = 0.75, SE = 0.11) compared with White women (SRR=1), but more likely than Black Caribbean women. There was no difference in reporting low levels of practical support between Pakistani, and Irish, Indian and Bangladeshi women. There were no differences in the perceived levels of low emotional support between Pakistani women (SRR = 0.95, SE = 0.13) and women of all other ethnic groups. This could have been a result of the way in which emotional support was measured; it only related to the support that participants perceived from their nominated closest person. This is in contrast to the social support measure used in the HSEs 1999 and 2004 which asked questions about social support from all family and

friends. One study highlighted the importance of the (extended) family as a source of support, advice and care, and in some cases family members were the only source of support available to Pakistani women, especially those who were born in Pakistan (Campbell & McLean, 2003).

3.4.3. Pakistani women's reasons for mental health service (non-) use

All the studies reviewed for this research question were qualitative in nature (see Table 3.8). The age range of the samples in these studies tended to be narrower and younger than for the papers for preceding research questions. It was not the aim of any of the studies to investigate the association between social networks and usage of mental health services. However, there were indications that social networks in the form of family could influence decisions to seek mental health care. Overall, there were few positive views in the papers in relation to mental health services and health professionals more widely. The results of the synthesis for this research question resulted in three broad themes, outlined below.

Coping alone as a result of the stigma of mental illness. All papers found that women felt they had to cope alone with mental health problems. In three out of four papers, one of the reasons for this was the stigma associated with having and speaking about mental illness, and this was argued to be directly linked to Pakistani culture: family and community members were seen as sources of stigmatising attitudes. The findings indicated that keeping problems to one's self was often a coerced choice, and one paper (Cinnirella & Loewenthal, 1999) found that there were strong beliefs amongst participants that problems should be kept private within the family. The fear of being gossiped about was a strong theme in the focus groups conducted by Chew-Graham and colleagues (2002) and the way in which this could ruin one's reputation was commented on by Cinnirella and Loewenthal (1999). None of the papers were comparative in nature, therefore the levels of stigma for Pakistani women could not be compared with women of other ethnic groups.

Table 3.8: Summary of studies relating to reasons for patterns of usage of mental health services (n=4)

First author, date	Location	Sample size (Age)	Pakistani women N (%)	Aims	Sample	Research Method
Wood, 2011	Leeds	5 (20-29)	4 (80.0)	To investigate how South Asian women understand and make sense of their experiences of self-harm and how they perceive support services	South Asian women aged between 18 and 40 with experience of self-harm, educated in Britain &living in the local area	Qualitative Interview
Chew-Graham, 2002	Salford, Trafford & Manchester	29 (17-50)	18 (62.1)	To investigate the self-reported needs of South Asian women suffering mental health problems which may lead to suicide and self-harm	Attenders of existing South Asian Women's groups in the local area	Focus groups
Grewal, 2002	England	116 (25-50)	11 (9.5)	To examine respondents' accounts of their pathways to mental health services	Purposive sample from EMPIRIC respondents	Qualitative interview
Cinnirella, 1999	South East England, London & Midlands	52 (N/R*)	13 (25.0)	To investigate the degree to which beliefs about religion intertwine with lay beliefs about depression and schizophrenia.	Pakistani Muslim, White Catholic, Black African/ Afro-Caribbean Christian & White Orthodox Jewish women living in specified local areas	Qualitative interview

*Not reported

Preference for, but problems with, Pakistani health professionals. There was a clear contradiction evident in three of the four papers: Pakistani women preferred to see health professionals from their own ethnic group so that their problems could be understood appropriately; all of the women that took part in interviews in Cinnirella and Loewenthal's paper (1999) stated that they would prefer to see a Pakistani Muslim professional. However, women were also mistrustful of consulting health professionals from their own community (this included support staff such as receptionists and practice managers (Chew-Graham et al., 2002)) due to fear of disclosure to family members and other people in their community. Only one paper found that the reason for wanting to see a professional of the same background was due to "mainstream service providers [who] were usually White" (Chew-Graham et al., 2002: 344) potentially having fixed views about the Pakistani community and displaying racism.

Language barriers. Two papers found that lack of English language skills affected access to, or experience of, services (Chew-Graham et al., 2002; Grewal & Lloyd, 2002). In particular, there was a sense that lack of English proficiency could impact negatively on knowledge of available services (Chew-Graham et al., 2002) and on the quality of services received, if they were provided via an interpreter, as patients could not communicate directly with health professionals (Grewal & Lloyd, 2002). Only one paper made reference to the lack of knowledge about mental health services amongst Pakistani women (Grewal & Lloyd, 2002), which was inferred by the lack of information provided by participants; the authors of this paper commented that "there was little discussion, even when prompted, among the South Asian (Bangladeshi, Indian and Pakistani) respondents about services apart from those provided by GPs" (p.54).

3.5. Discussion

3.5.1. Main Findings

This systematic review investigated whether the usage of mental health services differed between Pakistani women and women of other ethnic groups in the UK, the nature of Pakistani women's networks compared with women of other ethnic groups, and whether social networks were involved in seeking help for mental health problems for Pakistani women.

The review provided evidence that usage of mental health inpatient services in recent years was lower for Pakistani women than for White British, White Irish, Black Caribbean, and Black African women. There were not any differences in usage between Pakistani, and Bangladeshi and Indian women. Pakistani women had lower usage of outpatient services such as Crisis Resolution Home Treatment (CRHT), Assertive Outreach (AO) and Early Intervention (EI) services compared with Black Caribbean and Black African women. Their rates of use were lower than White British women in relation to CRHT and referral and entry to Improving Access to Psychological Therapies (IAPT) services. There was no difference in outpatient service use between Pakistani and Bangladeshi women. Indian women had lower rates of use of CRHT and EI compared with Pakistani women, but there were no differences in use between these two groups in AO or IAPT services. There were slightly higher rates of use of counsellor and psychologists for Black Caribbean, White and Irish women compared with Pakistani women but the statistical significance of these differences were not provided in the papers. GP consultations for mental health problems were found to be lower for Pakistani women than White women, but no different from other ethnic groups in the EMPIRIC study. However in the HSE 1999, Pakistani women's rates of GP consultation for anxiety or depression were no different from the general population, and they were more likely to consult the GP than Bangladeshi or Chinese women. This difference may have been because the general

population sample in the HSE 1999 consisted of some ethnic minority women (8.7%). Nevertheless, whether the rate of GP consultation for mental health problems was the same as, or lower than, for White women, this is surprising given that Pakistani women (along with Bangladeshi women) have higher GP consultation rates than most other ethnic groups (Balarajan, Yuen, & Soni Raleigh, 1989; Nazroo, Falaschetti, Pierce, & Primatesta, 2009).

Unfortunately, none of the studies took into account women's level of mental illness. Therefore it is possible that the usage rates for Pakistani women and for some other ethnic minority groups may be overestimated (and the ethnic difference, underestimated), given that these groups may have higher levels of mental illness than the White majority. The only consideration given to the potential for ethnic differences in usage rates to be underestimated was in Glover and Evison's report (2009). The authors suggested that referral rates to IAPT services were less than would be expected given the rates of mental illness for Pakistani, Indian, Irish and Black Caribbean women. Nor did the studies adjust rates for socioeconomic factors such as income or employment status. Previous studies have shown that higher levels of area deprivation, and lower socioeconomic status (e.g. being unemployed) are associated with higher rates of GP consultation for mental illness (c.f. Goddard & Smith, 2001 for a review).

There were differences evident in the social networks of Pakistani women compared with women of other ethnic groups. In comparison to White women, Pakistani women were more likely to have contact with a greater number of relatives; there was no difference between Pakistani women and other ethnic minority women. Pakistani women were less likely to have contact with friends than White, White Irish and Black Caribbean women; there were no differences between Pakistani, Indian and Bangladeshi women. The qualitative studies showed that Pakistani women had limited social interaction with people who were not Pakistani and those that were not part of their family or community. There was an indication from one paper that this was the case for older Pakistani women, but not

younger women (Campbell & McLean, 2003). However, the extent to which this was unique to Pakistani women was not assessed by the review due to the lack of comparative qualitative studies. Indeed, recent work by Finney and colleagues (Finney et al., 2015) has shown that Pakistani people, as well as many other ethnic minority groups, reported mixed ethnic networks (defined as having some close friends from another ethnic group) more than White majority groups, although this was not reported separately for women and men.

Pakistani women were more likely to report severe lack of social support in their networks, compared with women in the general population and Irish women. There was no difference between Pakistani women and Indian, Bangladeshi and Chinese women. Pakistani women were more likely to report negativity from close persons in the network, compared with White women but less likely to than Bangladeshi women; there were no differences between Pakistani women and Indian, Black Caribbean and Irish women. The measures and descriptions of social networks used within each paper had some limitations: measuring support only from the closest person, measuring positive support only, lack of comparative qualitative work between women of different ethnic groups.

There was an indication that Pakistani women's social networks influenced attitudes towards mental health services and the course of action they chose to take. The studies reviewed showed that Pakistani women felt they had to cope alone with mental illness, due to the negative stigmatising attitudes towards mental illness in their close networks, particularly from family. Further, women were deterred from accessing services due to the fear that professionals of the same ethnic group would leak information to people that women knew. The negative effects of stigma associated with having a mental illness and receiving psychological or psychiatric help are likely to be felt by many people suffering with mental illness (Corrigan, Druss, & Perlick, 2014; Corrigan, 2004; Phelan, Bromet, & Link, 1998; Schomerus & Angermeyer, 2008; Thornicroft, 2006, 2008). The review highlights the possibility that the level of stigma felt by Pakistani women may act as a

greater deterrent to accessing services than for women of other ethnic groups. Certainly, previous research from other countries, and reviews have shown that for some ethnic minority groups, the stigma surrounding mental health related problems might be a greater deterrent to seeking help than for White majority populations (Anglin et al., 2006; Clement et al., 2015; Conner et al., 2010; Loya, Reddy, & Hinshaw, 2010; Nadeem et al., 2007; Pescosolido, Medina, Martin, & Long, 2013; Rao, Feinglass, & Corrigan, 2007). However, the levels of stigma by ethnicity could not be investigated in this review, because none of the papers commenting on stigma compared Pakistani women's experience with that of White women. This is also the case for much of the research (qualitative and quantitative) that has explored mental illness stigma in other ethnic minority groups in the UK (Knifton, 2012; Rehman & Owen, 2013; Shefer et al., 2013; Tabassum, Macaskill, & Ahmad, 2000). These studies have recruited only ethnic minority participants thereby reinforcing the idea that ethnic minority groups have higher levels of mental illness stigma, without providing any evidence that this is higher than the White majority. Unfortunately, there are not any large survey datasets in the UK that allow quantitative comparison of levels of felt stigma between ethnic groups, to ascertain if this is the case. Without this kind of data, stereotypes relating to mental illness stigma in Pakistani women's networks may be perpetuated (Batsleer et al., 2003; Beliappa, 1991; Webb-Johnson, 1995), leading to inaccurate reasons for Pakistani women's under-use of mental health services.

3.5.2. Strengths and Limitations of the Review

This is the first review to the author's knowledge that has been conducted on this topic for Pakistani women in the UK. As the focus of the review was specifically Pakistani (not South Asian) women, a more accurate picture of their mental health service use and social networks was provided, compared with many previous studies that reported results for South Asian women as one group. The findings relating to mental health service use and the results of the quantitative studies about social support are generalisable to the

population of England (or UK). The evidence obtained from the synthesis of the qualitative studies may not be generalisable to the wider population, but it is encouraging that similar themes were extracted from these studies, as for the quantitative studies. There were very few Pakistani women (between four and 18) in the research studies that were used to answer the third research question (whether social networks were involved the help-seeking and access process for Pakistani women). Hence, the results for this research question are limited and should be viewed as tentative, especially in relation to findings about higher mental illness stigma in Pakistani women. This also highlights the lack of studies in the UK that have sought to determine the influence of social networks on mental health service use, for both Pakistani women, and for women more generally. In addition, the use of the category 'Pakistani' is not without problems; the term must not be assumed to represent a homogenous group with identical background and experience, as shown by the differences in the socioeconomic statuses and Pakistani region of origin between the women in Rodriguez's (2007) and Campbell and McLean's (2003) studies. However, often the ethnic categories that are used in research studies and national statistics are the only ones available for the purpose of highlighting ethnic inequalities.

Many of the identified papers were excluded from the review due to their inapplicability to the research questions and a relatively small number (n=9) were excluded due to methodological limitations at the critical appraisal stage. This is perhaps in contrast to other systematic reviews that excluded large numbers of papers due to poor quality during critical appraisal (Morgan et al., 2013). This reflects the narrow nature of the topic and the lack of appropriate use of ethnic categories in previous research. Indeed a large number (n=54) of studies were excluded because they did not analyse Pakistani women as a unique category but chose to subsume Pakistani women into the broader category of South Asian women. This practice should not be continued as the review showed that there are some differences in outpatient mental health use between Pakistani, Indian and

Bangladeshi women. The review did not identify any studies looking at the use of mental health services in the voluntary sector. Given the results of this review that Pakistani women are less likely to use some NHS mental health services, it is possible that the voluntary sector is a more likely route for gaining access to services (Bhui & Sashidharan, 2003; Fountain & Hicks, 2010).

3.5.3. Conclusions and Implications

Pakistani women are at a considerable disadvantage in gaining access to and using statutory mental health services, compared with White women. There were some differences evident between Pakistani and Indian women in relation to outpatient services, but no differences between Pakistani and Bangladeshi women. Importantly, most of the studies reviewed did not take into account known correlates of mental health service use (mental illness, socioeconomic status), which suggests that ethnic differences in usage rates may have been underestimated. The only study that accounted for mental illness showed that the rate of referral to mental health services was lower than would be expected based on the proportions of women with mental illness in the Pakistani and Indian ethnic groups, but not the Bangladeshi group. This shows the importance of analysing Pakistani women separately from Indian and Bangladeshi women. Future research and Department of Health published figures should analyse and report Pakistani women's data separately from Indian and Bangladeshi women in order to provide accurate information on usage of mental health services.

Although the "under-representation of Asian women receiving support from mental health services" (Her Majesty's Government and Department of Health 2011: 26) has been identified by the Department of Health as a concern, there is currently a lack of UK mental health policy to redress ethnic inequalities in the use of mental health services. Current figures provided by the Health and Social Care Information Centre (the national provider of health statistics) in England are not sufficient to monitor the differences in usage of

mental health services between women of different ethnic groups, thereby preventing researchers determining the equality or otherwise of the use of mental health services, on the grounds of ethnicity. For example, of the two most recent mental health service use annual reports published by the NHS, one provided separate usage rates for each ethnic group but not for men and women separately (Community and Mental Health Team: Health and Social Care Information Centre, 2015b), and the other stated that ethnic group was not recorded for 27% of service users (Community and Mental Health Team: Health and Social Care Information Centre, 2014a). Neither adjusted the rates of use by levels of mental illness prevalence in the population, rendering the statistics impractical for health researchers wanting to know if mental health services are responding to the differing levels of need amongst ethnic groups. This highlights the lack of progress in ethnic data monitoring by NHS institutions, which has been stressed by other researchers over the last decade (Aspinall & Anionwu, 2002; Aspinall, 2006; Mathur et al., 2014; Psoinos, Hatzidimitriadou, Butler, & Barn, 2011; Raleigh et al., 2007).

Further, the review showed that Pakistani women have relatively high levels of social isolation compared with White women, and have networks which display high levels of stigma towards mental illness and usage of mental health services. There were some limitations in the findings of the studies that were synthesised for the review, in that measures of social support were often limited to measuring only positive aspects of support, or support from one person only. The next chapter in this thesis addresses these limitations by investigating the nature of Pakistani women's social networks (compared with women of other ethnic groups), using the UK's largest household survey (Understanding Society), which measures social support (both positive and negative aspects) from three main sources – partners, relatives and friends.

Chapter 4: What is the nature of Pakistani women's social support networks?

4.1. Introduction

The positive social support that social networks are perceived to provide has been shown by previous studies to reduce mental health service use (Golding & Wells, 1990; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008). Despite this evidence, social support (as well as other aspects of social networks) has not been investigated in the context of the under-use of mental health services by Pakistani women in the UK. Previous work has suggested that Pakistani women lack social support and are particularly socially isolated (Chaudhry et al., 2012; Gask et al., 2011; Gater et al., 2009), and this may hinder them from accessing services. The results from the previous chapter's systematic review were consistent with these previous studies, and found that Pakistani women are lacking in social support, and experience higher levels of negative aspects of social support, compared with some other ethnic groups (Calderwood & Tait, 2001; Natarajan, 2006; Stansfeld & Sproston, 2002), and provided an indication that aspects of social networks influence mental health service use.

However, some of the studies in the review that used quantitative survey data used limited measures of social support networks (support from only one close person, only positive aspects of support). The qualitative studies in the review that focussed on social support tended to depict social isolation as the norm for Pakistani women, without robust comparative research with women of other ethnic groups (Campbell & McLean, 2003; Chew-Graham et al., 2002; Gask et al., 2011; Rodriguez, 2007). Hence, the findings from the review suggested that a better assessment of social support between women of different ethnic groups was needed.

Further, drawing on work that has focussed on social support and social networks from other scholarly fields, the picture of the nature of social support for Pakistani women becomes less clear. In contrast to the low levels of social support found in the systematic review for this thesis, there have been some suggestions (especially from anthropological work in Pakistani communities in England), that because Pakistani women are more likely to live in large extended families, and perhaps have contact with a large number of people from their own ethnic group, they are in a position to gain a high level of social support from their social networks. The basis for such a notion has been inferred from findings of anthropological studies undertaken with Pakistani men in cities in Northern England (Anwar, 1979; Kalra, 2000; Werbner, 1979), the findings of which cannot be assumed to hold for women.

Although there is some evidence to suggest that Pakistani women (as well as Bangladeshi and Indian women) live in larger households, and have greater contact with their non-immediate family than White majority women (Berthoud & Beishon, 1997), this does not equate to more or better social support. The narrative of greater social support for Pakistani women, indicating less need for support from statutory services, is certainly something that has been suggested in the literature relating to caring for elderly relatives amongst ethnic groups, with suggestions that ethnic minority groups "look after their own" (Katbamna et al., 2004; Murray & Brown, 1998). This has been shown to be inaccurate in relation to the amount of support available to Pakistani carers, compared with White carers (Willis et al., 2013), with support being about the same for both groups.

In order to clarify the nature of Pakistani women's social support networks, and how they compare with women of other ethnic groups, this study uses the most up to date survey data available in the UK (The United Kingdom Household Longitudinal Study (UKHLS), also known as Understanding Society). These data are more detailed than those collected in previous surveys in the UK: social support is measured in relation to three

different sources (partner, relatives and friends), and about both positive and negative aspects of support. The research question is stated in the next section.

4.2. Research Question

i. What is the nature of Pakistani women's social support networks, and how do they compare with women of other ethnic groups?

4.3. Methods

4.3.1. Data: Design and Sample

Data from Wave 2 of The UK Household Longitudinal Study (UKHLS), Understanding Society, were used. This is a nationally representative survey, sampling over 40,000 private households in England, Wales, Scotland and Northern Ireland. The overall aim of Understanding Society is to provide longitudinal data about people on a variety of policy relevant topics such as health, income, social life, as well as providing a sample which allows these to be examined robustly by ethnic group. To this end, the study employs ethnic minority boost sampling for five ethnic groups in the UK: Indian, Pakistani, Bangladeshi, Black African, and Black Caribbean (Berthoud et al., 2009). These sample members are known as the Ethnic Minority Boost (EMB) sample. The rest of the people recruited to the survey are the General Population Sample (GPS). In addition, participants from an existing longitudinal survey, the British Household Panel Survey (BHPS) (Lynn, 2006) were incorporated into the sample from Wave 2 of Understanding Society. Hence, the survey can be thought of as having three components: EMB, GPS and BHPS. For the purposes of this analysis, BHPS members are excluded, as this part of the sample has endured 18 waves of attrition. Further the GPS and EMB samples were

designed to be representative of the UK population at the time of data collection, hence the BHPS sample is not required.

Understanding Society employs a complex survey design, in order to ensure that the achieved sample is representative of the population of the UK. In England, Wales and Scotland, a stratified, clustered, equal probability sample of residential addresses was taken from the small user Postal Address File (PAF) (Lynn, 2009). The addresses were selected in two stages: first postal sectors were selected to be Primary Sampling Units (PSUs) and then addresses were selected within each PSU. For the GPS, postal sectors with less than 500 addresses were grouped together with adjacent sectors. Postcode sectors were assigned to 108 strata and were sorted by ethnic minority concentration within each stratum. Stratification was undertaken to improve the precision of estimates. From this stratified list of postal sectors, 2,640 PSUs were selected using systematic random sampling. Within each PSU, 18 addresses (secondary sampling units, SSUs) were selected using systematic random sampling. In Northern Ireland, the sample was an unclustered systematic random sample of residential addresses taken from the Land and Property Services Agency.

The EMB sample aimed to recruit 1,000 participants per ethnic group (Indian, Pakistani, Bangladeshi, Black African, Black Caribbean). Approximately 43,000 addresses were screened from postal sectors where the ethnic minority concentration was more than 5%. Different ethnic groups were assigned different selection probabilities in order to ensure recruitment of scarcest ethnic minorities (Berthoud et al., 2009). After the first 6 months of data collection for Wave 1, response rates and achieved interviews for the EMB was reviewed. At this stage, additional addresses were screened in areas of high Bangladeshi density in order to boost their size in the sample.

The survey began in 2009; Wave 2 data were collected over the two year period from January 2010 to March 2012. Only adults (aged 16 years and above) were administered the full adult interview and the adult self-completion questionnaire. Children

aged 10 to 15 years were asked to fill in a short youth questionnaire. The main adult from each household also filled in a household survey. In Wave 2, 30,508 households were surveyed. This constituted a household response rate of 76.2% (Knies, 2014). Overall, 54,597 adults were interviewed, of whom 29,551 (54.1%) were women. The adult individual unconditional cross-sectional response rate[1] was 64.4%; this included full interviews, proxy[2] interviews and interviews conducted over the telephone[3]; the equivalent percentage for the Ethnic Minority Boost (EMB) sample was lower at 52%. The survey was conducted by the National Centre for Social Research Methods. Interviews were carried out in participants' homes by trained interviewers via Computer Assisted Personal Interviewing (CAPI) (or Computer Assisted Telephone Interviewing (CATI) for a small number of people originating from the BHPS) and self-completion survey forms (Knies, 2014). Survey instruments were translated into nine non-English languages: Arabic, Bengali, Cantonese, Punjabi in Gurmukhi script, Punjabi in Urdu script, Somali, Urdu, and Welsh.

Data were accessed from the UK Data Service (University of Essex. Institute for Social and Economic Research and NatCen Social Research, 2014) under End User Licence. A large set of weights are provided for users; the use of a specific weight is dependent on the nature of analysis. Using weights for analysis ensures that the sample is representative of the UK population at the time of data collection, allowing statistical inference from the sample to the population from which the sample was taken. The weight

[1] This is the proportion of the sample that responded in Wave 2, out of all those that were eligible in that wave (Lynn, 2005 cited in Cheshire, Ofstedal, Scholes, & Schroeder, 2011). The equivalent conditional response rate (the proportion of the sample that responded given they responded in Wave 1) was 74.7% (including proxy and telephone interviews). The conditional response rate for the Ethnic Minority Boost sample was much lower (65% compared with 74.6% for the General Population Sample).

[2] Proxy interviews were completed by participating adults on behalf of adults in eligible households that were not able to be interviewed. Proxy interviewees only answer certain questions that are deemed feasible for them to know the response to, and they do not fill in the adult self-completion questionnaire. 3,882 (7.1%) adult interviews were done via proxy. For women the figure was 1,210 (4.1%).

[3] Telephone interviews were only conducted for respondents in 425 households originating from the British Household Panel Survey (BHPS) that had previously stated they would like to be interviewed by telephone (Boreham, 2012). The BHPS sample members are not included in the analysis. However, response rates are reported here for the full sample.

used for this analysis consisted of a design weight to account for differing probabilities of selection, and non-response adjustment.

As the present analysis is cross-sectional and uses data from the self-completion aspect of the interview, the appropriate weight was the Wave 2 cross-sectional self-completion weight, “b_indscus_xw” (Knies, 2014). This weight was calculated by multiplying together three separate components: the Wave 1 individual weight, the inverse of the probability of individual response to Wave 2, and the inverse of the probability of completing the Wave 2 self-completion questionnaire. The Wave 1 individual weight took into account the design of the survey, household non-response and individual non-response. The probability of household non-response was modelled using backwards stepwise logistic regression, separately for England, Wales, Scotland and Northern Ireland, using a large number of area predictors (e.g. for England predictors included proportion of people in area employed, proportion owning own home from the 2001 Census, deprivation as measured by the Indices of Multiple Deprivation (IMD) 2010). Wave 1 individual probability of response was modelled using backwards stepwise logistic regression using information from the Wave 1 household questionnaire as predictors (e.g. age, gender, marital and employment status, household size). The probability of individual response to Wave 2 was also modelled using backwards stepwise logistic regression, using Wave 1 household and individual characteristics as predictors. The product of the Wave 1 individual weight and the inverse of the probability of response to Wave 2, resulted in the Wave 2 longitudinal weight. The Wave 2 cross-sectional weight was equal to the Wave 2 longitudinal weight for all individuals, apart from for new sample members that joined the survey at Wave 2, and people living in the same household as these new members. For these members, the weight share method (Lavallee, 1995 cited in Lavallee, 2007:10) was used to allocate a cross-sectional weight (weight = sum of Wave 2 longitudinal weights in household/ number of people in household (Lynn, 2015)). Finally in order to produce the

Wave 2 self-completion weight, the Wave 2 cross-sectional weight was multiplied by the inverse of the probability of completing the self-completion questionnaire. The use of this specific weight ensured that the design and non-response of the survey have been adjusted for, and that estimates from analysis were representative of the population of the UK at the time of data collection.

For the present analysis, only women in the GPS and EMB samples that had completed the self-completion questionnaire (data on social support and mental illness were collected via this method), and for whom ethnic group data were available were selected. Women who were given a non-zero weight for the self-completion questionnaire were also excluded (n=133); these were White British women who were selected as part of the EMB sample but were not considered to be part of the sample, as Understanding Society survey sampling rules state that non-ethnic minority individuals can be sampled only via the GPS. Hence their data were not used. Finally, manual checks of the data showed that 165 women had missing data on all of the social support questions to be used for the outcome variable; these women were also excluded. The final sample available for analysis was 17,165 (58.1% of women in the sample). Due to missing data on covariates to be used in analyses, the final sample size was 16,874. Details on the nature of missing data are provided in sections 4.3.2. to 4.3.5 below.

4.3.2. Outcome Variable: Social Support Networks

Understanding Society Wave 2 contains questions that measure support from partners (only answered if married or living with a partner), relatives (only answered if had immediate family), and friends (only answered if had friends). There were six questions about each source of support, totalling 18 questions (see Table 4.1). These questions were asked via self-completion questionnaire; participants chose one response out of four options for each question (1: A lot, 2: Somewhat, 3: A little, 4: Not at all). For the analysis, a fifth category was created for each variable which recorded if the person did not have a

partner for the six questions relating to partners; the same procedure was followed for relatives and friends.

Table 4.1: Social support questions in Understanding Society Wave 2.

We would now like to ask you some questions about your spouse or partner[a]. Please tick the box which best shows how you feel about each statement *(In the questionnaire four tick boxes are provided for each question: A lot, Somewhat, A little, Not at all)*
1. How much do they really understand the way you feel about things?
2. How much can you rely on them if you have a serious problem?
3. How much can you open up to them if you need to talk about your worries?
4. How much do they criticise you?
5. How much do they let you down when you are counting on them?
6. How much do they get on your nerves?

[a] The same 6 questions are asked separately in relation to relatives and separately in relation to friends.

These questions have been used in other surveys (Midlife in the United Stated (MIDUS) and the English Longitudinal Study of Ageing (ELSA)), however there are not any published papers that detail a recommended scoring system for these items, to extract support scores or types of support. One method used by Walen and Lachman (2000) was to estimate three separate principal components analyses on the items relating to partner, relatives, and friends, with six resulting components (support and strain from the three sources). These were subsequently used in regression analyses as explanatory variables. Although there is merit to this method, it was not appropriate for the present analysis as social support was to be used as an outcome variable. Hence, a method that used these 18 items to provide a summary or classification of networks was required. The method chosen was Latent Class Analysis (LCA), a probabilistic modelling technique to classify cases into related types or classes based on categorical multivariate data (McCutcheon, 1987). Full details of the modelling technique are provided in the statistical modelling (4.3.7.) and results (4.4.5.) sections. This technique does not allow comment on the nature of support from each source (partners, relatives and friends) separately, but instead gives a summary of all the support available in the network. Descriptive statistics are presented for support from partners, relatives and friends separately (see sections 4.4.2., 4.4.3., and 4.4.4.).

4.3.3. Ethnic Group

Ethnic group was measured with 18 categories used in the 2011 Census for England and Wales. Participants chose one ethnic group only. Women's ethnic group is shown in Table 4.2; this excludes women who did not complete the self-completion questionnaire, and BHPS sample members. For the analysis, the following seven ethnic groups were used: White British, White Irish, Indian, Pakistani, Bangladeshi, Black Caribbean, and Black African.

Sample sizes in the White Gypsy or Irish Traveller, Mixed (including Other Mixed), Chinese, Other Black, Arab and Other groups were small ($n<130$ for each of these groups, see Table 4.2) and hence would not have allowed subgroup analysis. It was not appropriate to amalgamate these groups into one overarching 'Other' ethnic group, due to the inability to draw conclusions about this heterogeneous group (Simpson, Jivraj, & Warren, 2014). The Other White and Other Asian groups were quite large ($n=535$ and $n=219$ respectively) and would have allowed subgroup analysis, but were excluded for the same reason as excluding the 'Other' ethnic group.

Table 4.2: Ethnic Group of women in Understanding Society Wave 2 (groups used in the analysis are shaded in grey)

Ethnic Group	N	%
White British	15,034	79.03
White Irish	275	1.45
White Gypsy or Irish Traveller	7	0.04
Other White	535	2.81
Mixed White & Black Caribbean	127	0.67
Mixed White & Black African	44	0.23
Mixed White & Asian	77	0.40
Other Mixed	72	0.38
Indian	539	2.83
Pakistani	419	2.20
Bangladeshi	219	1.15
Chinese	81	0.43
Other Asian	219	1.15
Black Caribbean	394	2.07
Black African	417	2.19
Other Black	32	0.17
Arab	65	0.34
Other	79	0.42
Missing	207	1.09
Total	**18,842**	**100**

Consideration was given to amalgamating each of the mixed ethnic groups with their ethnic minority group (e.g. combining Mixed White & Black Caribbean women with Black Caribbean women). However, on inspection of the mental health scores[1] (SF12 (Ware, Kosinski, Turner-Bowker, & Gandek, 2001) and General Health Questionnaire (GHQ, Goldberg et al., 1997)) of these groups, although it was evident that Indian women had similar mental health scores to Mixed White & Asian women, Mixed White & Black Caribbean and, Mixed White & Black African women had worse mental health than Black Caribbean and Black African women, respectively (see Table 4.3). For this reason, it was decided to refrain from amalgamating these groups. Hence the final sample size was 17,165 (women for whom self-completion questionnaire was available, one of the seven ethnic groups, and did not originate from the BHPS sample).

[1] Both mental health measures are described in more detail in the following section, 4.3.4.

Table 4.3: Mental health scores of Mixed ethnic group women, compared with their ethnic minority counterparts

Ethnic group	SF12 MCS[a] score	95% CI[b]	GHQ[c] score	95% CI
Black Caribbean	47.8	46.7-48.9	11.9	11.2-12.6
Mixed White & Black Caribbean	45.8	43.6-48.0	12.3	11.1-13.5
Black African	48.2	46.8-49.5	10.9	10.2-11.6
Mixed White & Black African	45.8	42.8-48.8	13.1	11.1-15.0
Indian	49.2	48.2-50.2	11.2	10.7-11.8
Mixed White & Asian	49.9	48.0-51.9	10.9	9.7-12.0

[a] SF12 (Ware et al., 2001) Mental Component Score: higher score indicates better mental health
[b] Confidence Interval
[c] General Health Questionnaire (Goldberg et al., 1997): higher score indicates worse mental health

4.3.4. Mental Health and Illness

Understanding Society provides two measures of mental health. This first is the Mental Component Score (MCS), a summary score derived from 12 questions on the SF12 – a self-report questionnaire measuring functional health and well-being (Ware et al., 2001). Items ask whether physical and emotional problems have affected daily activities, and how respondents have been feeling over the past four weeks (see Appendix 4.1 for details of the 12 items). The MCS was derived according to an algorithm provided by the authors (Ware et al., 2001); this was provided in the dataset. For this instrument, scores were standardised with a mean of 50, standard deviation of 10 and can range between 0 and 100. For women in the analytic sample, scores ranged from 0 to 77.1, with mean 49.3 and standard deviation 9.9. A higher score indicates better mental health. The MCS scores by ethnic group for women in the sample are shown in Table 4.4. Data were missing for 1,816 out of 17,165 women (10.6%). These were missing due to item non-response (i.e. a score was not derived because between 1 and 11 of the 12 items were missing). Pakistani and Bangladeshi women had the lowest mean MCS score, suggesting the worst mental health and White British women had the highest mean MCS score.

Table 4.4: SF12 Mental Component Summary (MCS) Score by ethnic group (weighted data, unweighted n=15,349)

Ethnic Group	SF12 MCS	95% CI
White British	49.3	49.2 – 49.5
White Irish	48.7	47.5 – 50.0
Indian	49.2	48.2 – 50.2
Pakistani	47.1	45.7 – 48.5
Bangladeshi	47.1	44.4 – 49.9
Black Caribbean	47.8	46.7 – 48.9
Black African	48.2	46.9 – 49.5

The second measure of mental health provided in the dataset was the General Health Questionnaire (GHQ12, Goldberg et al., 1997). This instrument contains 12 items to detect psychiatric disorder in clinical and non-clinical populations. Questions focus on the respondent's mood over the "last few weeks" (see Appendix 4.2 for details of the 12 questions). A higher score indicates worse mental health. Data were missing for 279 out of 17,165 women (1.6%). These were missing due to item non-response. The dataset provides a derived summary score of the GHQ, based on the scoring advocated by the test authors (Goldberg et al., 1997), whereby the answer categories are scored 0, 0, 1, 1, resulting in a score of between 0 and 12. According to this method of scoring, Pakistani women had the worst mental health (GHQ score = 2.40, see Table 4.5) and White British (GHQ = 1.92) and Indian (GHQ score = 1.93) women had the best mental health. The GHQ can also be dichotomised to represent non-clinical cases (score of less than four) and clinical cases (score of four or more), with the latter considered to be indicative of psychiatric morbidity (Goldberg & Williams, 1988). According to this, the percentage of women meeting clinical cut off was greatest in the Bangladeshi (28.3%) group, followed by Pakistani (27.6%) women, and White Irish (27.1%) women.

The SF12 and the GHQ scores were strongly correlated (Pearson's correlation coefficient = -0.7). Out of these two measures of mental health, the GHQ was chosen as it was designed to detect minor psychiatric disorders and hence is more likely to detect mental illness over the SF12, which is a measure of general wellbeing. The GHQ also

displayed a lower level of missing data, thereby allowing more women to be used in the analysis. The test authors advocate that the GHQ be used as a continuous score or as a binary variable. For this analysis, it was used as a binary variable (0, does not meet case criteria; 1 meets case criteria); this was due to the high percentage (54.8%) of women scoring 0 on the continuous version of the variable, making use of this variable as continuous, problematic.

Table 4.5: GHQ by ethnic group (weighted data, unweighted n=17,139)

	GHQ scoring advocated by authors		Percentage meeting caseness	
Ethnic group	**Score**	**95% CI**	**%**	**95% CI**
White British	1.92	1.87 – 1.98	20.5	19.8 – 21.2
White Irish	2.28	1.88 – 2.68	27.1	21.5 – 32.7
Indian	1.93	1.63 – 2.22	19.9	16.2 – 23.6
Pakistani	2.44	2.08 – 2.80	27.6	22.5 – 32.8
Bangladeshi	2.34	1.68 – 3.00	28.3	20.1 – 36.5
Black Caribbean	2.35	1.97 – 2.72	25.8	21.1 – 30.5
Black African	2.20	1.82 – 2.58	25.0	19.8 – 30.2

4.3.5. Control Variables

The analysis was adjusted for variables that were thought to have an influence on social support networks.

Age. Age was provided as a continuous variable in the dataset. This ranged from 16 to 102 for women (mean (unweighted) = 47.8, SD = 17.9). Age was not missing for any women in the analysis. Age was transformed into a categorical variable with five categories (16 to 29 years, 30 to 39, 40 to 49, 50 to 64, and 65 years and over). This was to account for the potentially non-linear association between age and social support networks. Age 16 to 29 was used as the reference category.

Country of birth. A binary variable was used to indicate if a woman had been born in the UK; this was merged into the dataset from the Understanding Society cross-wave dataset (a file that contains participant data that are thought to remain stable over time). Data were missing for 3 (0.02%) women.

Income. Personal gross income was provided in the Understanding Society dataset. However, there were a large number of zeros in this variable, making its use problematic. Household gross income was also available (in the household level file); this was weighted using the Organisation for Economic Co-operation and Development (OECD) modified scale, to obtain the household equivalised gross income. Weights were provided in the dataset for this purpose; the scale assigns a weight of 1 to the first adult in the household, 0.5 to each additional person aged 14 or over and 0.3 to each child under 14 (A. Hagenaars, de Vos, & Zaidi, 1994). The household income was divided by the sum of these weights to produce the household equivalised gross income. Adjusting income in this way accounts for differing household sizes in the sample. From this sample, the weighted mean household size (rounded to the nearest integer) was highest for Pakistani and Bangladeshi women at five. For Black African and Indian women, it was four and for White British, White Irish and Black Caribbean women it was three. The resulting income was split into five weighted quintiles using the cross-sectional household weight ('b_hhdenub_xw'). This was to account for the potentially non-linear effect of household income. This variable was matched from the household level file to the individual file using a many to one merge. Quintile 1 (used as the reference category) represents the lowest household income, and 5 the highest.

It is important to note that the total household income variable in the provided dataset is an imputed variable. The imputation was performed by members of the Understanding Society technical team (Knies, 2014). Income was not imputed for non-responding households. Income was missing for 3 women; they resided in households where a household questionnaire had not been filled in, and hence household income was not computed by the Understanding Society team (Petersen, 2015). It was imputed for individuals that answered the individual questionnaire but did not answer all the income questions. The Understanding Society team imputed the following personal income

variables: wages, self-employment earnings, second job earnings, interests and dividends, pensions, benefits and other income sources. The method used was imputation by chained equations (ICE, Raghunathan, Lepkowski, Hoewyk, & Solenberger, 2001; van Buuren, Boshuizen, & Knook, 1999). This method is a multivariate technique which imputes a set of variables at the same time using multiple equations; it has been used in other large surveys such as the European Community Household Panel (ECHP) Survey, a cross-national longitudinal survey focussing on household income and living conditions. A large number of relevant variables (e.g. age, sex, ethnic group, tenure, household size) from Wave 2 as well as the lagged income variable from Wave 1 were used in regression equations to create estimates for missing income. As well as imputing (filling in) values of income, this method creates values for missing data on the covariates that are used in the method i.e. ethnic group is used in the imputation to estimate income, and simultaneously, an equation will estimate ethnic group for people whose ethnic group is missing. Understanding Society does not provide the imputed data for all the covariates that are used in the ICE procedure; only income is given in the dataset.

Table 4.6 shows the percentage of household income that was imputed for women in the sample. Income was imputed for a 57.15% of women in the sample used for this analysis. For 16% of women, the proportion of income imputed was fairly low (less than 10% imputed). For a further 16%, between 10 and 50% of the income was imputed. Almost 23% of women had between 50 and 100% of their household income imputed. For 2.8% women, all of the household income was imputed.

Table 4.6: Percent imputed income for women in the sample (n=16,874)

% Imputed income	% Women in the sample
0	42.85
> 0 & <10	15.89
>=10 & <20	5.27
>=20 & <30	3.64
>=30 & <40	3.18
>=40 & <50	3.42
>=50 & <60	3.71
>=60 & <70	2.93
>=70 & <80	3.40
>=80 & <90	3.51
>=90 & <100	9.36
100	2.84
Total	**100**

Employment Status. This was used as a categorical variable in the analysis. Ten categories of employment status were provided in the dataset: self-employed, employed (full-time or part-time), unemployed, retired, on maternity leave, looking after family or home, full time student, long term sick or disabled, government training scheme, unpaid work or family business, and other economic inactivity. Six categories of employment status were created for the analysis (where applicable, subsumed categories are shown in brackets): employed (self-employed, employed, on maternity leave, government training scheme), unemployed, retired, looking after home or family, full time student, long term sick or other economically inactive (long term sick or disabled, unpaid work or family business, other economic inactivity). Employed was used as the reference category.

Highest educational qualification. This was used as a categorical variable in the analysis. Six categories of qualifications were provided in the dataset. These were: degree, higher degree, A-Levels, GCSEs, Other qualifications, and no qualifications[1]. Degree was used as the reference category. Data were missing for 8 (0.05%) women.

[1] A degree refers to an undergraduate/ bachelor's degree; higher degree refers to postgraduate degrees such as Masters programs and PhDs; A-Levels are qualifications typically gained at age 18 at the end of two years of study at a further education college; GCSEs are qualifications typically gained at age 16 at the end of secondary school (attended from age 11 to 16); other qualifications include qualifications gained outside of the UK, vocational qualifications, professional certificates, and other training and certifications not classified in categories already mentioned.

4.3.6. Other Variables considered for analysis

Consideration was given to using language proficiency as a variable in the model. However, none of the women in the analytic sample were interviewed in a non-English language, although women in the overall sample were. Hence, this variable was not used in the analysis due to low variation. Marital status was used in exploratory analysis but not in final models. This was because marital status was highly correlated with the six questions that ask about support from partners; these six questions were used to formulate the latent classes that were used as outcome variables in the regression analysis. Hence, when marital status was used as an explanatory variable in the regression models, the odds ratios were very high.

4.3.7. Statistical Modelling Approach

First, descriptive statistics (weighted) were calculated to show the distribution of the 18 social support indicator variables by ethnic group. Next an exploratory latent class analysis was undertaken to ascertain the number of classes (of social support) that were evident in the data. Finally, these classes were used in multinomial logistic regression models to investigate the association between ethnic group and social support networks. Women who had missing data on any of the covariates to be used in the analysis were excluded from the sample (291/17,165: 1.7% of women), in order to ensure the same analytic sample was used for each regression. The analytic sample size was 16,874 (used for descriptive statistics, exploratory latent class analysis and multinomial regression models).

Exploratory Latent Class Analysis. Latent Class Analysis (LCA) is a person-oriented statistical technique that classifies people into "subtypes… …that exhibit similar patterns of individual characteristics" (Collins & Lanza, 2010: 8). In this analysis, LCA was used to classify women into types of social support networks based on their answers to 18 questions about support from partners, relatives and friends. The type of support

network is not an observable (measureable) entity, but there were a number of observed variables that can be thought to relate to an underlying unobserved categorical variable of support network type (McCutcheon, 1987). The main premise of latent class analysis (LCA) is that the covariance that is seen amongst the observed variables is due to each of the observed variables' relationship with the latent variable i.e. the response patterns that we see in the observed variables are due to the underlying latent variable (McCutcheon, 1987). Further, the observed scores of people that are assigned to the same class are thought to come from the same probability distributions (Vermunt & Magidson, 2002). The latent class model does not need to assume multivariate normality nor continuity of measurement, and hence is appropriate for the identification of a latent categorical variable from two or more observed categorical variables.

The 18 social support questions were used to formulate the latent classes; the model is summarised in Figure 4.1. In this figure, "c" represents the underlying set of classes (social support network types) that are thought to cause the 18 observed indicators of social support. The social support indicators are denoted by the variables u_1 to u_{18}. The terms e_1 to e_{18} represent the measurement error associated with each of the observed social support indicators. The LCA was estimated using MLR (maximum likelihood with robust standard errors) estimation in Mplus (Muthen & Muthen, 2012). This can sufficiently handle missing data on the observed variables on the assumption of missing at random (MAR), and is a practical alternative to multiple imputation (Allison, 2012a). This was possible due to the fact that Mplus uses Full Information Maximum Likelihood (FIML) estimation via MLR the for latent class models. Both MLR estimation and multiple imputation provide more accurate estimates of true population parameters when compared with listwise deletion (Acock, 2005). For the present analysis, up to 3% (see section 4.4.1.) of women had missing data on the social support variables used in the LCA. By using the method of estimation described above, these women were not excluded from the analysis.

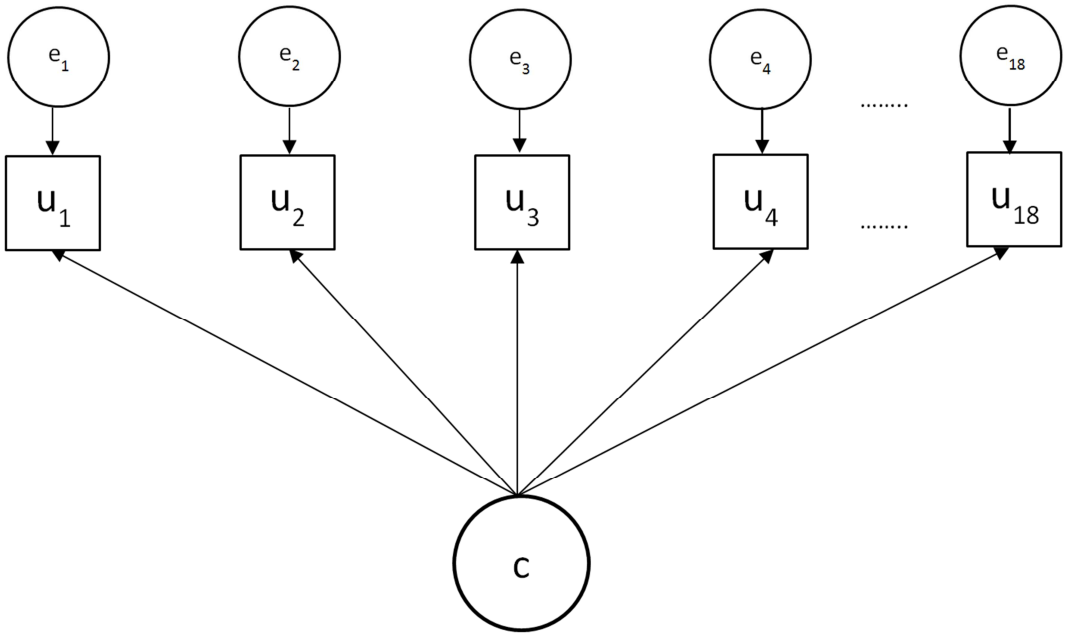

Figure 4.1: Latent Class Model Diagram

Multinomial Logistic Regression using Three Step Auxiliary Variable Approach. When the latent classes were formulated, they were used as outcome variables in a multinomial logistic regression. This type of model is used to model data where the outcome takes the form of two or more nominal categories (Hosmer, Lemeshow, & Sturdivant, 2013). Initially, the latent class formulation and multinomial regression were done together in "one step". This method re-estimates the latent class solution each time a new covariate is added to the model. As additional covariates were added to the model, the way in which women were classified changed. For example, when age was added to the model, some women who were classified as being inadequately supported changed to being classified as well supported. Further, this model failed to converge to a suitable solution. These are known problems in using a one-step approach (Vermunt, 2010).

An alternative method is the three step auxiliary variable approach (Asparouhov & Muthén, 2014; Vermunt, 2010). This approach firstly estimates the latent class model using the latent class indicators (in the present study these are the social support items). In the second step, a nominal variable N (the most likely class) is created. For each case

(woman), N is set to the class for which the probability of being in the class, given the observed indicators, is the largest. In the third step, this variable N is used as an indicator of the latent class model, and the auxiliary variables (covariates) are added as predictors of the latent classes. By using N in this way, the measurement error associated with being classified in a certain class is taken into account. When using this method, women's classification does not change, hence as more covariates are added to the model, the effect of these can be compared directly with the previous model; this is not possible with the one-step approach. The third step of the three-step auxiliary model is summarised in Figure 4.2 (taken from Asparouhov & Muthén, 2014: 331). In this figure, "c" represents the estimated latent classes, N is the most likely class and x represents the auxiliary variables (covariates). This model was estimated in Mplus using the R3STEP command.

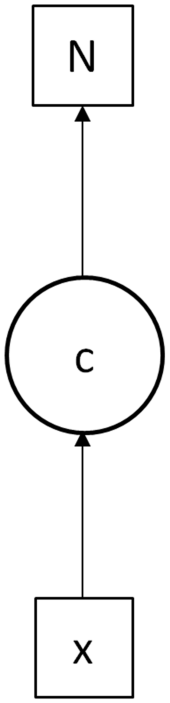

Figure 4.2: The third step of the three-step auxiliary latent class model (taken from Asparouhov & Muthén, 2014)

In order to answer the research question, a stepwise modelling approach was used. Four models were estimated; in each of these, Pakistani women were the reference ethnic group. The reference outcome class in the multinomial logistic regression models was the

well supported class. Model 1 used ethnic group as a covariate and adjusted for age. Model 2 included mental illness as well as the covariates (ethnic group and age) from Model 1. Model 3 added UK born status to the Model 2, and finally Model 4 added socio-economic variables (household equivalised income, highest educational qualification and employment status) to Model 3.

Descriptive statistics were calculated using Stata 13 (StataCorp, 2013). Latent class analysis and subsequent multinomial logistic regression analyses were performed in Mplus 7.11 (Muthen & Muthen, 2012), using maximum likelihood estimation with robust standard errors (MLR). An alpha level of 5% ($p<0.05$) was used for statistical significance. All analyses took account of the complex survey design and non-response to the survey (as described earlier in section 4.3.1) by specifying the appropriate weight, strata, and clusters in both Mplus and Stata.

4.4. Results

4.4.1. Sample Characteristics

The sample characteristics are shown in Table 4.7. A total of 17,165 women were eligible for the analyses. Pakistani, Bangladeshi and Black African women had the youngest age profiles in the sample. Overall, 10% of women were born outside the UK. There were large proportions of women born outside the UK in all the ethnic minority groups (Black African (87%), Indian (66%), Bangladeshi (54%), Pakistani (49%), Black Caribbean (46%), White Irish (40%)). The majority of women in the sample were married or living with a partner (62%). The proportion was higher for Indian (71%), Pakistani (63%) and White British (63%) women.

Table 4.7: Sample Characteristics (n=17,165, unweighted). Values are number (percentage)

	Pakistani (N=419)	**White British (N=14,910)**	**White Irish (N=268)**	**Indian (N=539)**	**Bangladeshi (N=219)**	**Black Caribbean (N=394)**	**Black African (N=416)**	**Total (N=17,165)**
Age								
16-29	181 (43.2)	2,501 (16.8)	41 (15.3)	126 (23.4)	104 (47.5)	71 (18.0)	135 (32.5)	3,159 (18.4)
30-39	111 (26.5)	2,262 (15.2)	61 (22.8)	163 (30.2)	66 (30.1)	66 (16.8)	133 (32.0)	2,862 (16.7)
40-49	84 (20.0)	2,832 (19.0)	56 (20.9)	124 (23.0)	36 (16.4)	113 (28.7)	88 (21.2)	3,333 (19.4)
50-64	31 (7.4)	4,035 (27.1)	60 (22.4)	95 (17.6)	10 (4.6)	92 (23.4)	50 (12.0)	4,373 (25.5)
65+	12 (2.9)	3,280 (22.0)	50 (18.7)	31 (5.8)	3 (1.4)	52 (13.2)	10 (2.4)	3,438 (20.0)
Country of Birth								
Not Born in UK	207 (49.4)	323 (2.2)	106 (39.6)	354 (65.7)	118 (53.9)	180 (45.7)	362 (87.0)	1,650 (9.6)
Born in UK	212 (50.6)	14,585 (97.8)	162 (60.4)	185 (34.3)	101 (46.1)	214 (54.3)	53 (12.7)	15,512 (90.4)
Missing	0 (0)	2 (0.01)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.2)	3 (0.02)
Marital Status								
Married/ living with partner	263 (62.8)	9,338 (62.6)	155 (57.8)	381 (70.7)	132 (60.7)	119 (30.2)	174 (41.8)	10,562 (61.5)
Single	118 (28.2)	2,585 (17.3)	64 (23.9)	107 (19.9)	71 (32.1)	194 (49.2)	164 (39.4)	3,303 (19.2)
Separated/ Divorced	31 (7.4)	1,656 (11.1)	23 (8.6)	29 (5.4)	13 (5.8)	61 (15.5)	64 (15.4)	1,877 (10.9)
Widowed	7 (1.7)	1,330 (8.9)	26 (9.7)	22 (4.1)	3 (1.3)	20 (5.1)	14 (3.4)	1,422 (8.3)
Missing	0 (0)	1 (0.01)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.01)
Household Equivalised Income								
Quintile 1 (Lowest)	191 (45.6)	2,625 (17.6)	60 (22.4)	118 (21.9)	80 (36.5)	92 (23.4)	142 (34.1)	3,308 (19.3)
Q2	110 (26.3)	3,045 (20.4)	50 (18.7)	93 (17.3)	66 (30.1)	84 (21.3)	90 (21.6)	3,538 (20.6)
Q3	53 (12.6)	3,176 (21.3)	55 (20.5)	112 (20.8)	42 (19.2)	95 (24.1)	91 (21.9)	3,624 (21.1)
Q4	43 (10.3)	3,065 (20.6)	57 (21.3)	103 (19.1)	19 (8.7)	74 (18.8)	47 (11.3)	3,408 (19.9)
Q5 (Highest)	22 (5.3)	2,996 (20.1)	46 (17.2)	113 (21.0)	12 (5.5)	49 (12.4)	46 (11.1)	3,284 (19.1)
Missing	0 (0)	3 (0.02)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (0.2)
Employment Status								
Employed	117 (27.9)	7,781 (52.2)	144 (53.7)	293 (54.4)	54 (24.7)	210 (53.3)	197 (47.4)	8,796 (51.2)
Unemployed	32 (7.6)	593 (4.0)	15 (5.6)	31 (5.8)	27 (12.3)	41 (10.4)	43 (10.3)	782 (4.6)
Retired	11 (2.6)	3,967 (26.6)	53 (19.8)	45 (8.3)	3 (1.4)	62 (15.7)	17 (4.1)	4,158 (24.2)
Looking after home/ family	184 (43.9)	1,285 (8.6)	28 (10.4)	109 (20.2)	86 (39.3)	26 (6.6)	74 (17.8)	1,792 (10.4)
Full time student	61 (14.6)	678 (4.5)	17 (6.3)	41 (7.6)	42 (19.2)	34 (8.6)	76 (18.3)	949 (5.5)
Long term sick or other	14 (3.3)	605 (4.1)	11 (4.1)	20 (3.7)	7 (3.2)	21 (5.3)	9 (2.2)	687 (4.0)
Missing	0 (0)	1 (0.01)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.01)

Table 4.7 (continued): Sample Characteristics (n=17,165, unweighted). Values are number (percentage)

	Pakistani (N=419)	**White British (N=14,910)**	**White Irish (N=268)**	**Indian (N=539)**	**Bangladeshi (N=219)**	**Black Caribbean (N=394)**	**Black African (N=416)**	**Total (N=17,165)**
Highest Qualification								
Degree	92 (22.0)	2,825 (18.9)	67 (25.0)	179 (33.2)	42 (19.2)	90 (22.8)	122 (29.7)	3,417 (19.9)
Higher Degree	36 (8.6)	2,009 (13.5)	34 (12.7)	73 (13.5)	9 (4.1)	66 (16.8)	74 (17.3)	2,301 (13.4)
A-Level	96 (22.9)	2,533 (17.0)	34 (12.7)	98 (18.2)	52 (23.7)	69 (17.5)	79 (18.7)	2,961 (17.3)
GCSE	92 (22.0)	3,423 (23.0)	53 (19.8)	87 (16.1)	59 (26.9)	90 (22.8)	56 (13.8)	3,860 (22.5)
Other qualification	30 (7.2)	1,577 (10.6)	21 (7.8)	31 (5.8)	14 (6.4)	36 (9.1)	32 (7.7)	1,741 (10.1)
No qualification	73 (17.4)	2,535 (17.0)	69 (22.0)	71 (13.2)	43 (19.6)	43 (10.9)	53 (12.9)	2,877 (16.8)
Missing	0 (0)	8 (0.05)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (0.05)
GHQ Caseness								
Mental Illness	111 (26.5)	3,005 (20.2)	68 (25.4)	113 (21.0)	63 (28.8)	87 (22.1)	91 (21.9)	3,538 (20.6)
No Mental Illness	298 (71.1)	11,701 (78.5)	194 (72.4)	404 (75.0)	149 (68.0)	294 (74.6)	308 (74.0)	13,348 (77.8)
Missing	10 (2.4)	204 (1.4)	6 (2.2)	22 (4.1)	7 (3.2)	13 (3.3)	17 (4.1)	279 (1.6)

Almost half of all Pakistani (46%) women and over a third of Bangladeshi (37%) women were in the lowest quintile of household income. Over half of the women in the sample were employed. However employment rates for Bangladeshi (25%) and Pakistani (28%) women were much lower; large proportions of Pakistani (44%) and Bangladeshi (39%) women were looking after the home or family. White Irish (22%) and Bangladeshi (20%) women reported high levels of no qualifications. In the sample, 21% of women met clinical criteria for mental illness. The percentage was considerably higher for Bangladeshi (29%), Pakistani (27%) and White Irish (25%) women.

4.4.2. Association between ethnic group and social support

Tables 4.8 to 4.10 show the distribution of the social support variables by ethnic group for the questions relating to partners, relatives, and friends, respectively. The amount of missing data for questions is shown in Appendix 4.3. Overall, there was less than 3% missing data for each question. The percentages shown in tables 4.8 to 4.10 are weighted. There were five answer categories for each question (A lot, Somewhat, A little, Not at all, No partner/ No immediate family/ No friends). For the purposes of the descriptive statistics presented here, these five categories were reduced to three (A lot or Somewhat, A little or Not at all, No partners/ No immediate family/ No friends), in order to be able to provide a succinct description of the availability of support from partners, relatives and friends. For a breakdown of the percentages of women answering in the five original categories, see Appendices 4.4 to 4.6.

Table 4.8: Support from partner by ethnic group (weighted percentages).
Unweighted Totals range from 16,748 to 16,774 for items due to differing levels of missing data.

In relation to partner, how much…	Pakistani		White British		White Irish		Indian		Bangladeshi		Black Caribbean		Black African		Total	
	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women
…do they really understand the way you feel about things?																
A lot or Somewhat	82.7	47.4	83.9	52.0	86.2	49.7	86.3	60.2	79.1	50.0	80.0	29.5	86.9	39.3	83.9	51.7
A little or Not at all	17.3	9.9	16.1	10.0	13.8	7.9	13.7	9.5	20.9	13.2	20.0	7.4	13.1	5.9	16.1	9.9
No partner	N/A	42.7	N/A	38.1	N/A	42.4	N/A	30.3	N/A	36.8	N/A	63.1	N/A	54.8	N/A	38.4
…can you rely on them if you have a serious problem?																
A lot or Somewhat	84.4	48.5	93.9	58.2	89.8	51.9	90.3	63.3	76.9	48.6	81.0	29.9	91.1	41.2	93.5	57.6
A little or Not at all	15.6	9.0	6.1	3.8	10.2	5.9	9.4	6.6	23.1	14.6	19.0	7.0	8.9	4.0	6.5	4.0
No partner	N/A	42.5	N/A	38.0	N/A	42.2	N/A	30.1	N/A	36.8	N/A	63.1	N/A	54.8	N/A	38.4
…can you open up to them if you need to talk about your worries?																
A lot or Somewhat	82.7	47.5	87.6	54.3	91.9	53.2	89.4	62.5	74.8	47.3	78.0	28.8	90.4	41.2	87.6	54.0
A little or Not at all	17.3	10.0	12.4	7.7	8.1	4.7	10.6	7.4	25.2	15.9	22.0	8.1	9.6	4.4	12.4	7.7
No partner	N/A	42.5	N/A	38.0	N/A	42.1	N/A	30.1	N/A	36.8	N/A	63.1	N/A	54.4	N/A	38.4
…do they criticise you?																
A lot or Somewhat	34.0	19.5	19.0	11.8	18.6	10.8	36.2	25.2	28.2	17.7	30.7	11.3	38.3	17.4	19.8	12.2
A little or Not at all	66.0	37.8	81.0	50.2	81.4	47.1	63.9	44.5	71.8	45.2	69.3	25.5	61.7	28.0	80.2	49.4
No partner	N/A	42.8	N/A	38.0	N/A	42.2	N/A	30.3	N/A	37.0	N/A	63.2	N/A	54.6	N/A	38.4
…do they let you down when you are counting on them?																
A lot or Somewhat	26.9	15.4	10.5	6.5	17.0	9.8	24.8	17.3	32.7	20.6	23.3	8.6	20.1	9.1	11.2	6.9
A little or Not at all	73.1	41.8	89.5	55.5	83.0	48.1	75.2	52.5	67.3	42.4	76.7	28.2	79.9	36.3	88.8	54.7
No partner	N/A	42.8	N/A	38.0	N/A	42.1	N/A	30.2	N/A	37.0	N/A	63.2	N/A	54.6	N/A	38.4
…do they get on your nerves?																
A lot or Somewhat	30.7	17.5	15.0	9.3	22.6	13.1	24.0	16.7	33.8	21.3	27.4	10.1	32.0	14.5	15.8	9.7
A little or Not at all	69.3	39.7	85.0	52.7	77.4	44.7	76.0	53.0	66.2	41.8	72.6	26.7	68.0	30.8	84.2	51.9
No partner	N/A	42.8	N/A	38.0	N/A	42.2	N/A	30.3	N/A	36.9	N/A	63.3	N/A	54.7	N/A	38.4

Table 4.9: Support from relatives by ethnic group (weighted percentages).
Unweighted Totals range from 16,589 to 16,689 for items due to differing levels of missing data.

In relation to relatives, how much…	**Pakistani**		**White British**		**White Irish**		**Indian**		**Bangladeshi**		**Black Caribbean**		**Black African**		**Total**	
	% women with family	% all women	% women with family	% all women	% women with family	% all women	% women with family	% all women	% women with family	% all women	% women with family	% all women	% women with family	% all women	% women with family	% all women
…do they really understand the way you feel about things?																
A lot or Somewhat	75.8	72.8	73.7	72.6	77.4	76.8	82.7	80.5	78.9	72.0	67.8	66.4	77.9	74.9	74.0	72.7
A little or Not at all	24.2	23.2	26.3	25.8	22.6	22.5	17.3	16.9	21.1	19.3	32.2	31.5	22.1	21.3	26.0	25.6
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.7	N/A	2.1	N/A	3.8	N/A	1.7
…can you rely on them if you have a serious problem?																
A lot or Somewhat	82.5	79.2	86.2	84.8	84.3	83.6	83.6	81.4	82.1	74.9	78.6	77.0	79.9	76.9	85.9	84.5
A little or Not at all	17.5	16.8	13.8	13.6	15.7	15.6	16.4	16.0	17.9	16.4	21.4	21.0	20.1	19.4	14.1	13.8
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.7	N/A	2.1	N/A	3.8	N/A	1.7
…can you open up to them if you need to talk about your worries?																
A lot or Somewhat	73.0	70.1	75.8	74.6	75.4	74.8	76.3	74.2	74.2	67.7	72.8	71.3	74.2	71.4	75.7	74.4
A little or Not at all	27.0	25.9	24.2	23.8	24.6	24.4	23.7	23.1	25.9	23.6	27.2	26.6	25.8	24.8	24.3	23.9
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.7	N/A	2.1	N/A	3.8	N/A	1.7
…do they criticise you?																
A lot or Somewhat	27.9	26.8	17.0	16.8	16.0	15.9	26.8	26.1	18.8	17.1	28.5	27.9	34.4	33.1	17.6	17.3
A little or Not at all	72.1	69.2	83.0	81.6	84.0	83.3	73.2	71.2	81.2	74.1	71.5	70.0	65.6	63.1	82.4	81.0
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.8	N/A	2.1	N/A	3.8	N/A	1.7
…do they let you down when you are counting on them?																
A lot or Somewhat	23.4	22.5	11.6	11.4	11.4	11.3	21.9	21.3	21.0	19.2	23.8	23.3	21.9	21.0	12.1	11.9
A little or Not at all	76.6	73.5	88.4	87.0	88.6	87.9	78.1	76.0	79.0	72.1	76.3	74.7	78.1	75.2	87.9	86.4
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.7	N/A	2.1	N/A	3.8	N/A	1.7
…do they get on your nerves?																
A lot or Somewhat	30.5	29.3	15.2	14.9	18.0	17.8	20.4	19.9	25.2	23.0	29.4	28.8	34.6	33.3	15.9	15.6
A little or Not at all	69.5	66.7	84.8	83.4	82.0	81.4	79.6	77.5	74.8	68.3	70.6	69.2	65.4	62.9	84.1	82.7
No immediate family	N/A	4.0	N/A	1.6	N/A	0.8	N/A	2.7	N/A	8.8	N/A	2.1	N/A	3.8	N/A	1.7

Table 4.10: Support from friends by ethnic group (weighted percentages).
Unweighted Total ranges from 16,588 to 16,722 for items due to differing levels of missing data.

In relation to friends, how much…	Pakistani		White British		White Irish		Indian		Bangladeshi		Black Caribbean		Black African		Total	
	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women	% women with friends	% all women
…do they really understand the way you feel about things?	87.7	81.6	81.6	79.0	85.2	82.7	85.0	81.1	87.2	79.4	79.0	76.2	79.2	76.7	81.8	79.1
A lot or Somewhat	12.3	11.5	18.4	17.8	14.8	14.4	15.0	14.3	12.8	11.6	21.0	20.3	20.8	20.1	18.3	17.6
A little or Not at all	N/A	7.0	N/A	3.2	N/A	3.0	N/A	4.6	N/A	9.0	N/A	3.6	N/A	3.2	N/A	3.3
No friends																
…can you rely on them if you have a serious problem?																
A lot or Somewhat	78.8	73.3	83.3	80.6	88.9	86.3	77.0	73.5	76.6	69.8	77.6	74.9	70.0	67.8	83.0	80.3
A little or Not at all	21.2	19.7	16.7	16.1	11.1	10.8	23.0	21.9	23.4	21.3	22.4	21.6	30.0	29.0	17.0	16.4
No friends	N/A	7.0	N/A	3.2	N/A	2.9	N/A	4.6	N/A	9.0	N/A	3.5	N/A	3.2	N/A	3.3
…can you open up to them if you need to talk about your worries?																
A lot or Somewhat	78.8	73.3	80.7	78.1	83.6	81.2	76.1	72.6	81.2	73.9	80.0	77.2	70.5	68.2	80.5	77.8
A little or Not at all	21.2	19.7	19.3	18.7	16.4	15.9	23.9	22.8	18.8	17.1	20.0	19.3	29.5	28.6	19.5	18.9
No friends	N/A	7.0	N/A	3.2	N/A	2.9	N/A	4.6	N/A	9.0	N/A	3.6	N/A	3.2	N/A	3.3
…do they criticise you?																
A lot or Somewhat	20.2	18.8	6.7	6.5	8.7	8.4	14.5	13.9	15.1	13.7	14.4	13.9	29.3	28.4	7.4	7.1
A little or Not at all	79.8	74.2	93.3	90.3	91.3	88.6	85.5	81.5	84.9	77.3	85.6	82.5	70.7	68.4	92.6	89.5
No friends	N/A	7.0	N/A	3.2	N/A	3.0	N/A	4.7	N/A	9.0	N/A	3.6	N/A	3.2	N/A	3.3
…do they let you down when you are counting on them?																
A lot or Somewhat	23.7	22.0	10.5	10.1	10.4	10.1	20.7	19.8	21.4	19.4	20.0	19.2	28.1	27.2	11.1	10.8
A little or Not at all	76.3	71.0	89.5	86.7	89.6	86.9	79.3	75.6	78.6	71.5	80.0	77.2	71.9	69.6	88.9	85.9
No friends	N/A	7.0	N/A	3.2	N/A	3.0	N/A	4.6	N/A	9.1	N/A	3.6	N/A	3.2	N/A	3.3
…do they get on your nerves?																
A lot or Somewhat	18.1	16.9	6.6	6.4	9.6	9.3	13.5	12.9	16.1	14.6	10.4	10.0	25.9	25.1	7.2	6.9
A little or Not at all	81.9	76.2	93.4	90.4	90.4	87.7	86.5	82.5	83.9	76.3	89.6	86.5	74.1	71.7	92.8	89.8
No friends	N/A	7.0	N/A	3.2	N/A	3.0	N/A	4.6	N/A	9.1	N/A	3.6	N/A	3.2	N/A	3.3

Support from partners. The majority of women had a partner (62%). Table 4.8 shows that compared with Pakistani women (43%), greater proportions of Black Caribbean (63%) and Black African (55%) women were without partners (percentages cited from second column in the table for each ethnic group i.e. '% all women'). The proportion of women without partners was the same or lower than for Pakistan women, for women of all other ethnic groups. There were higher proportions of Black African (87%), Indian (86%), White Irish (86%) and White British (84%) women than Pakistani women (83%) that said they had partners that really understood (a lot or somewhat) the way they felt about things (cited from first column for each ethnic group i.e. '% women with partners'). Higher proportions of women in these same ethnic groups also said they could rely on their partners a lot if they had serious problems, and open up to their partners, compared with Pakistani women.

Over a third of Pakistani women who had partners (34%) felt criticised by them a lot or somewhat. This was higher than all other ethnic groups apart from Indian (36%) and Black African (38%) women. Compared with Pakistani women (27%), a greater proportion of Bangladeshi (33%) women reported they had partners that let them down when they were counting on them a lot or somewhat. The proportion was lower for all other ethnic groups than for Pakistani women. Greater proportions of Bangladeshi (34%) and Black African (32%) than Pakistani (31%) women reported they had partners that got on their nerves a lot or somewhat.

Support from relatives. Most women had relatives (see Table 4.9); only 1.7% women said they had no immediate family. More Bangladeshi (9%) than Pakistani (4%) women reported no relatives (see Table 4.9; percentages cited from second column within each ethnic group i.e. '% all women'). Compared with Pakistani women (76%), there were higher proportions of Indian (83%), Bangladeshi (79%), Black African (78%), and White Irish (77%) women that said their relatives really understood the way they felt about things

(a lot or somewhat; percentages cited from first column within ethnic groups i.e. '% women with family'). Higher proportions of White British (86%), White Irish (84%) and Indian (84%) women than Pakistani women (83%) reported they could rely on relatives a lot or somewhat if they had serious problems. The proportion of Pakistani (73%) women that said they could open up to their relatives (a lot or somewhat) if they needed to talk about their worries was lower than for women of all other ethnic groups (except Black Caribbean women).

Compared with Pakistani (28%) women, higher proportions of Black African (34%) and Black Caribbean (29%) women said they had relatives that criticised them a lot or somewhat. More women in the Black Caribbean (23.8%) group than in the Pakistani (23.4%) group said they had relatives that let them down (a lot or somewhat) when they were counting on them. Almost a third of Pakistani (31%) women said they had relatives that got on their nerves a lot or somewhat. The proportion was higher for only Black African women (34%), and lower for women of all other ethnic groups.

Support from friends. Overall, a small percentage of women stated that they did not have any friends (3.3%, see Table 4.10). The percentage was highest for Bangladeshi (9%) and Pakistani (7%) women. Out of all ethnic groups, the proportion of women reporting they had friends that really understood (a lot or somewhat) the way they felt about things, was highest for the Pakistani group (88%). Higher proportions of White Irish (89%) and White British (83%) women than Pakistani (79%) women said they had friends that they could rely on (a lot or somewhat) for serious problems. Greater proportions of White Irish (84%), Bangladeshi (81%), White British (81%) and Black Caribbean (80%) women than Pakistani (79%) women said they had friends they could open up to about their worries (a lot or somewhat). The proportion of women reporting that they had friends that criticised (a lot or somewhat) was highest for the Black African (29%) and Pakistani (20%) groups. These two groups also had the highest proportions of women that said they

had friends that let them down a lot or somewhat, and friends that got on their nerves (a lot or somewhat).

4.4.3. Association between mental illness and social support

A higher proportion of women with mental illness (defined as scoring 4 or more on the General Health Questionnaire (GHQ)) were without partners than women without mental illness (43% vs. 37%, see Table 4.11). For women who had partners, lower proportions of women with mental illness reported positive aspects about them than women without mental illness (partners understood them, 72% vs. 87%; could rely on partners, 87% vs. 95%; could confide in partners, 76% vs. 90%). Higher proportions of women with mental illness reported negative aspects about partners than women without mental illness (partners criticise them, 26% vs. 18%; partners let them down, 19% vs. 9%; partners annoy them, 26% vs. 13%). There were small difference between the percentages of women with (2%) and without mental illness (1.6%) that stated that they had no immediate family. There were larger difference between the percentages of women with (6%) and without mental illness (3%) that stated that they had no friends. The differences in social support from relatives and friends between women with and without mental illness followed the same pattern as for support from partners. Lower proportions of women with mental illness than women without mental illness said their relatives or friends understood them, could be relied upon or could be confided in. Higher proportions of women with mental illness than women without mental illness said that relatives and friends were critical, let them down or got on their nerves.

Table 4.11: Social support by presence of mental illness (weighted percentages)

	In relation to partner				In relation to relatives				In relation to friends			
	Mental illness		No mental illness		Mental illness		No mental illness		Mental illness		No mental illness	
	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women	% women with partners	% all women
…do they really understand the way you feel about things?												
A lot or Somewhat	72.0	40.1	86.8	54.6	60.1	58.9	77.6	76.4	74.6	70.3	83.6	81.4
A little or Not at all	28.0	15.9	13.2	8.3	39.9	39.1	22.4	22.0	25.5	24.0	16.4	16.0
Not applicable[a]	N/A	43.3	N/A	37.1	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7
…can you rely on them if you have a serious problem?												
A lot or Somewhat	86.7	49.2	95.1	59.9	77.4	75.8	88.1	86.7	75.9	71.6	84.8	82.5
A little or Not at all	13.3	7.6	4.9	3.1	22.6	22.1	11.9	11.7	24.1	22.7	15.2	14.8
Not applicable	N/A	43.3	N/A	37.1	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7
…can you open up to them if you need to talk about your worries?												
A lot or Somewhat	76.3	43.3	90.3	56.8	64.2	62.8	78.7	77.5	74.5	70.3	82.0	8.0
A little or Not at all	23.7	13.4	9.7	6.2	35.9	35.1	21.3	20.9	25.5	24.1	18.0	17.5
Not applicable	N/A	43.2	N/A	37.1	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7
…do they criticise you?												
A lot or Somewhat	25.9	14.7	18.4	11.5	24.1	23.6	16.0	15.7	9.7	9.1	6.8	66.3
A little or Not at all	74.1	41.2	81.6	51.3	76.0	74.3	84.1	82.7	90.4	85.2	93.2	90.7
Not applicable	N/A	43.3	N/A	37.2	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7
…do they let you down when you are counting on them?												
A lot or Somewhat	19.3	10.9	9.3	5.9	18.8	18.4	10.4	10.3	15.6	14.7	10.0	9.7
A little or Not at all	80.7	45.7	90.7	57	81.3	79.6	89.6	88.1	84.4	79.6	90.0	87.6
Not applicable	N/A	43.3	N/A	37.1	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7
…do they get on your nerves?												
A lot or Somewhat	26.0	14.7	13.4	8.4	23.3	22.8	13.9	13.7	11.0	10.4	6.2	6.0
A little or Not at all	74.1	42	86.7	54.5	76.7	75.1	86.1	84.7	89.0	83.9	93.8	91.3
Not applicable	N/A	43.3	N/A	37.1	N/A	2.1	N/A	1.6	N/A	5.7	N/A	2.7

[a] This denotes no partner for columns “in relation to partner”, no immediate family for columns “in relation to relatives”, and no friends for columns “in relation to friends”.

4.4.4. Types of Social Support Networks

Latent class models were estimated in Mplus using the 18 observed variables of social support as dependent variables, to produce classes of social support networks. The method of estimation for the models was maximum likelihood with robust standard errors (MLR). As this method is done by process of iteration, there is a chance that the model will arrive at an incorrect solution (known as converging around local maxima) rather than the correct solution (known as converging around the global maximum) (Goodman, 1974). In order to ensure the correct solution was arrived at, 200 random sets of starting values were used in the initial stage and 5 optimisations were requested (i.e. the –loglikelihood value for the 5 best optimisations). These –loglikelihoods were inspected to ensure that they had been replicated; they were replicated for all class solutions (n=1…6). The random seed associated with the best –loglikelihood was used to rerun the model using the "optseed" option in Mplus to ensure that the –loglikelihood could still be replicated (Asparouhov & Muthen, 2012). The –loglikelihood and other fit statistics were replicated using this method, suggesting that global maxima were reached for each class solution, thereby providing confidence in the correctness of the solutions.

Table 4.12 shows model fit statistics for solutions using 1 to 6 classes. These fit statistics were used together with the item response posterior probabilities, to make a judgement on which model was the best fit to the data. In general, models with higher -loglikelihood, lower Akaike Information Criterion (AIC), lower Bayesian Information Criterion (BIC), and lower sample size adjusted BIC are deemed to be better fitting models (Geiser, 2013; Weich et al., 2011). In addition, models with entropy closer to one than zero provide a more accurate classification of participants (Ramaswamy, Desarbo, Reibstein, & Robinson, 1993). The Lo-Mendell-Rubin likelihood ratio test of model fit (Lo, Mendell, & Rubin, 2001), compares the estimated model to a model with one less class. A statistically significant test indicates that the estimated model is preferred over the model with one less

class (Geiser, 2013). From Table 4.12, it can be seen there was not one model which was deemed to be the best fitting; AIC and BIC decreased with an increasing number of classes, and –loglikelihood increased with increasing number of classes. Further the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT) of model fit was statistically significant for each model with k classes when compared with models with k-1 classes, apart from for the six class model. This suggests that a six class model was not a better fit to the data compared with a five class model.

Table 4.12: Model fit statistics for Latent Class Analysis (n=16,874)

No of classes	-Loglikelihood	No of parameters	AIC	BIC	Sample size adjusted BIC	Entropy	LMR-LRT* p-value for k-1
1	-357,458	72	715,052	715,608	715,380	N/A	N/A
2	-300,562	145	601,414	602,536	602,075	0.996	P<0.001
3	-289,236	218	578,908	580,594	579,901	0.924	P<0.001
4	-279,897	291	560,376	562,627	561,702	0.940	P<0.001
5	-274,435	364	549,598	552,413	551,257	0.948	P<0.001
6	-270,247	437	541,368	544,748	543,359	0.920	P=0.760

*Lo-Mendell-Rubin Likelihood Ratio Test of model fit

Table 4.13 shows the weighted percentage of respondents classified within each latent class dependent on the number of classes that were extracted. The two class solution split the sample into women with partners (62% of women) and those who did not (38%). The three class solution split women into 1) those who had very supportive partners, relatives and friends, low levels of negative aspects of networks (i.e. less likely to answer that partners, friends and relatives criticised, annoyed them, or let them down) (35% of women), 2) those with no partners but with good support from friends and relatives, moderate levels of negative aspects of networks (38%), and 3) those with moderately supportive partners, relatives and friends and high negative aspects of networks (27%).

Table 4.13: Percentage women in each class for different LCA solutions (n=2 to n=6, weighted percentages).

N Class Solution				
2	**3**	**4**	**5**	**6**
No partners (38.3)	No partner but good support, moderate negative aspects (38.3)	No partner but good support (35.9)	No partner but moderate support (35.9)	No partner but moderately supportive friends and relatives (18.8)
Partners (61.7)	Very supportive, low negative aspects (34.6)	Very supportive, low negative aspects (29.4)	Very supportive, low negative aspects (29.4)	Very supportive (29.5)
	Moderately supportive, high negative aspects (27.1)	Moderately supportive, high negative aspects (29.8)	Moderately supportive (29.8)	Moderately supportive (29.7)
		Socially isolated (4.9)	No friends, low likelihood of partner but supportive relatives (3.2)	No friends, low likelihood of partner but supportive relatives (3.2)
			No relatives, low likelihood of partner but supportive friends (1.7)	No relatives, low likelihood of partner but supportive friends (1.7)
				No partner but very supportive friends and relatives (17.0)

The four class solution provided a more fine grained analysis, classifying women into three classes that were similar to those for the three class solution, and an additional category (5%) of women that were likely not have a partner, relatives or friends i.e. the most socially isolated. The five class solution categorised people into similar categories as the three class solution, and a class where women did not have relatives, and were likely not to have a partner but supportive friends (2%), and a final class where women had no friends, were likely not to have a partner but supportive relatives (3%). The six class solution split the class with no partners into those with very supportive (17%) and moderately supportive (19%) relatives and friends.

A four class solution was chosen as there were large enough proportions of women in each class (approximately 5% of women or more in each class) (see Appendix 4.7 for detailed item response probabilities conditional on being a member of a class for the four class solution). As the categories were to be used as outcome variables in multinomial

logistic regression for the next stage of analysis, it was preferable to have fewer classes, in order to make meaningful contrasts between the categories, whilst also capturing the breadth of types of social support networks. Although the five class solution split those who were socially isolated from the four class solution into those less likely to have friends and those less likely to have relatives, both classes represented people who were socially isolated (likely to have only one source of support). Hence the four class solution was preferable to the five class one.

The four classes were named to describe the nature of women classified within them (see Table 4.14). Ten percent (weighted percentage) of Pakistani women were socially isolated. This was less than for Bangladeshi women (15%) but greater than for all other ethnic groups. Over a third of Pakistani women were classed as inadequately supported; this was less than for Indian and Bangladeshi women but greater than all other ethnic groups. Black Caribbean and Black African women displayed the greatest proportions of women who were single and supported. Seventeen percent of Pakistani women were classed as well supported; this was lower than White British (30%), Indian (26%), White Irish (35%), and Bangladeshi women (18%). There were also differences in the proportions of women within each class that met criteria for mental illness. The proportions were highest in the socially isolated (32%) and inadequately supported (26%) classes, and lowest in the well supported (11%) and single and supported (23%) classes.

Table 4.14: Distribution of social support latent classes by ethnic group. Values are weighted percentages.

	Social Support Classes			
	Well supported	Single & supported	Inadequately supported	Socially isolated
	Very supported by partner, relatives and friends; low levels of negativity from network	*No partner; good support from relatives and friends; moderate levels of negativity from network*	*Moderate support from partner, relatives and friends; high levels of negativity from network*	*Unlikely to have partner, relatives, or friends; moderate levels of negativity from network*
Pakistani	17.1	38.5	34.3	10.0
White British	30.3	35.5	29.5	4.7
White Irish	24.7	40.3	31.4	3.7
Indian	25.5	28.3	39.4	6.9
Bangladeshi	17.9	32.0	35.3	14.8
Black Caribbean	10.8	59.4	24.5	5.3
Black African	12.9	50.0	30.3	6.8
Total	**29.6**	**35.8**	**29.7**	**4.9**
N (weighted)	*4,994*	*6,043*	*5,016*	*821*
N (unweighted)	*5,071*	*5,902*	*5,085*	*816*

4.4.5. Pakistani women's social support networks, compared with women of other ethnic groups

Having decided that the four class solution was preferable, multinomial logistic regression models were estimated with the four classes as outcome variables. Table 4.15 shows the results of four multinomial logistic regression models (labelled 1 to 4 in columns). Coefficients were exponentiated to obtain relative risk ratios (RRRs), and 95% confidence intervals were calculated. Probability values are provided for each of the coefficients of the model. The first page of the table shows the results for being in the socially isolated class versus the well supported class, the second page shows the results of being in the single and supported class compared with the well supported class, and the third page shows the results of being in the inadequately supported class compared with the well supported class. For ease of interpretation, and to avoid repetition, the results are presented in relation to each class separately, rather than each model.

Table 4.15: Association between ethnicity and social support networks: Socially isolated class vs. Well supported class. Values are relatives risk ratios (95% confidence intervals)

	Model 1: Ethnic group & age		Model 2: Ethnic group, age & mental illness		Model 3: Ethnic group, age , mental illness & country of birth		Model 4: Ethnic group, age , mental illness, country of birth & SES	
Socially isolated	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**
Ethnic Group (ref.[a] Pakistani)								
White British	0.21 (0.13 – 0.33)	<0.001	0.22 (0.14 – 0.36)	<0.001	0.20 (0.12 – 0.32)	<0.001	0.28 (0.16 – 0.47)	<0.001
White Irish	0.22 (0.10 – 0.47)	0.001	0.21 (0.09 – 0.49)	0.001	0.21 (0.09 – 0.48)	<0.001	0.27 (0.11 – 0.64)	0.003
Indian	0.45 (0.25 – 0.82)	0.011	0.50 (0.27 – 0.92)	0.027	0.51 (0.28 – 0.95)	0.035	0.75 (0.39 – 1.44)	0.384
Bangladeshi	0.72 (0.31 – 1.68)	0.459	1.36 (0.57 – 3.26)	0.488	1.37 (0.57 – 3.27)	0.484	1.28 (0.52 – 3.10)	0.593
Black Caribbean	0.83 (0.40 – 1.75)	0.643	0.87 (0.41 – 1.88)	0.731	0.66 (0.31 – 1.43)	0.716	1.22 (0.56 – 2.65)	0.621
Black African	0.98 (0.49 – 1.99)	0.966	1.02 (0.50 – 2.10)	0.957	1.20 (0.58 – 2.50)	0.617	1.44 (0.68 – 3.05)	0.347
Age (ref: 16-29)								
30-39	0.56 (0.41 – 0.76)	<0.001	0.54 (0.39 – 0.73)	<0.001	0.54 (0.39 – 0.73)	<0.001	0.57 (0.41 – 0.78)	0.001
40-49	0.71 (0.53 – 0.95)	0.022	0.66 (0.49 – 0.89)	0.006	0.66 (0.49 – 0.89)	0.007	0.67 (0.49 – 0.92)	0.015
50-64	0.77 (0.59 – 1.01)	0.063	0.73 (0.56 – 0.97)	0.027	0.74 (0.56 – 0.97)	0.032	0.64 (0.46 – 0.89)	0.007
65+	1.64 (1.24 – 2.15)	0.001	1.68 (1.27 – 2.22)	<0.001	1.69 (1.27 – 2.24)	<0.001	1.05 (0.70 – 1.59)	0.803
Mental Illness (ref: GHQ <4)								
GHQ >=4			4.22 (3.46 – 5.14)	<0.001	4.22 (3.46 – 5.14)	<0.001	3.24 (2.64 – 3.98)	<0.001
Country of Birth (ref: UK)								
Non UK					0.79 (0.56 – 1.11)	0.175	0.80 (0.55 – 1.16)	0.238
Household Equivalised Income (ref: Quintile 1[Lowest])								
Quintile 2							0.66 (0.52 – 0.84)	0.001
Quintile 3							0.54 (0.42 – 0.71)	<0.001
Quintile 4							0.38 (0.27 – 0.52)	<0.001
Quintile 5 (Highest)							0.24 (0.17 – 0.34)	<0.001
Highest Educational Qualification (ref: Degree)								
Higher Degree							1.08 (0.72 – 1.63)	0.706
A-Level							1.13 (0.77 – 1.65)	0.545
GCSE							1.49 (1.05 – 2.11)	0.026
Other Qualification							1.51 (1.01 – 2.27)	0.046
No Qualifications							2.47 (1.68 – 3.64)	<0.001
Employment status (ref: Employed)								
Unemployed							2.80 (1.85 – 4.24)	<0.001
Retired							1.08 (0.79 – 1.49)	0.633
Looking after home or family							1.10 (0.82 – 1.48)	0.535
Full time student							1.99 (0.98 – 4.05)	0.058
Long term sick or other							3.20 (2.14 – 4.79)	<0.001

[a] Reference category

Table 4.15 (continued): Association between ethnicity and social support networks: Inadequately supported class vs. Well supported class. Values are relatives risk ratios (95% confidence intervals)

	Model 1: Ethnic group & age		Model 2: Ethnic group, age & mental illness		Model 3: Ethnic group, age , mental illness & country of birth		Model 4: Ethnic group, age , mental illness, country of birth & SES	
Inadequately Supported	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**
Ethnic Group (ref.[a] Pakistani)								
White British	0.48 (0.34 – 0.68)	<0.001	0.50 (0.36 – 0.71)	<0.001	0.54 (0.38 – 0.77)	0.001	0.59 (0.40 – 0.85)	0.004
White Irish	0.64 (0.39 – 1.08)	0.094	0.63 (0.37 – 1.07)	0.090	0.63 (0.37 – 1.08)	0.094	0.68 (0.40 – 1.18)	0.174
Indian	0.76 (0.50 – 1.17)	0.225	0.81 (0.52 – 1.27)	0.363	0.80 (0.51 – 1.25)	0.322	0.87 (0.55 – 1.37)	0.542
Bangladeshi	1.00 (0.53 – 1.88)	0.998	0.97 (0.51 – 1.83)	0.921	0.96 (0.50 – 1.82)	0.896	0.92 (0.48 – 1.79)	0.819
Black Caribbean	1.20 (0.68 – 2.13)	0.539	1.23 (0.68 – 2.22)	0.489	1.25 (0.69 – 2.26)	0.462	1.30 (0.72 – 2.36)	0.387
Black African	1.23 (0.70 – 2.17)	0.478	1.24 (0.71 – 2.19)	0.453	1.27 (0.71 – 2.26)	0.421	1.30 (0.72 – 2.34)	0.385
Age (ref: 16-29)								
30-39	0.90 (0.75 – 1.07)	0.222	0.86 (0.72 – 1.03)	0.094	0.85 (0.71 – 1.02)	0.076	0.88 (0.73 – 1.05)	0.165
40-49	1.07 (0.90 – 1.28)	0.412	1.02 (0.86 – 1.21)	0.848	1.01 (0.85 – 1.20)	0.915	1.04 (0.87 – 1.25)	0.650
50-64	0.86 (0.73 – 1.01)	0.070	0.82 (0.70 – 0.97)	0.021	0.82 (0.69 – 0.96)	0.016	0.91 (0.76 – 1.09)	0.293
65+	0.61 (0.50 – 0.73)	<0.001	0.62 (0.51 – 0.74)	<0.001	0.61 (0.50 – 0.73)	<0.001	0.81 (0.62 – 1.06)	0.127
Mental Illness (ref: GHQ <4)								
GHQ >=4			3.04 (2.65 – 3.49)	<0.001	3.05 (2.66 – 3.49)	<0.001	2.92 (2.54 – 3.36)	<0.001
Country of Birth (ref: UK)								
Non UK					1.16 (0.90 – 1.48)	0.246	1.18 (0.92 – 1.51)	0.203
Household Equivalised Income (ref: Quintile 1[Lowest])								
Quintile 2							0.94 (0.79 – 1.13)	0.508
Quintile 3							0.86 (0.72 – 1.03)	0.094
Quintile 4							0.81 (0.67 – 0.96)	0.018
Quintile 5 (Highest)							0.69 (0.57 – 0.83)	<0.001
Highest Educational Qualification (ref: Degree)								
Higher Degree							1.28 (1.08 – 1.50)	0.003
A-Level							1.04 (0.88 – 1.22)	0.635
GCSE							1.17 (1.00 – 1.36)	0.050
Other Qualification							1.07 (0.87 – 1.31)	0.528
No Qualifications							1.08 (0.89 – 1.30)	0.437
Employment status (ref: Employed)								
Unemployed							1.46 (1.05 – 2.04)	0.026
Retired							0.69 (0.57 – 0.83)	<0.001
Looking after home or family							1.01 (0.85 – 1.20)	0.885
Full time student							1.30 (0.79 – 2.15)	0.303
Long term sick or other							1.20 (0.89 – 1.63)	0.236

[a] Reference category

Table 4.15 (continued): Association between ethnicity and social support networks: Single and supported class vs. Well supported class. Values are relatives risk ratios (95% confidence intervals)

	Model 1: Ethnic group & age		Model 2: Ethnic group, age & mental illness		Model 3: Ethnic group, age , mental illness & country of birth		Model 4: Ethnic group, age , mental illness, country of birth & SES	
Inadequately Supported	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**	**RRR (95% CI)**	**P value**
Ethnic Group (ref.[a] Pakistani)								
White British	0.64 (0.46 – 0.89)	0.010	0.66 (0.47 – 0.94)	0.020	0.58 (0.41 – 0.83)	0.003	0.80 (0.54 – 1.18)	0.256
White Irish	0.97 (0.59 – 1.59)	0.907	0.95 (0.57 – 1.59)	0.854	0.98 (0.58 – 1.64)	0.936	1.23 (0.71 – 2.13)	0.467
Indian	0.62 (0.40 – 0.96)	0.039	0.66 (0.41 – 1.04)	0.072	0.70 (0.44 – 1.11)	0.128	0.86 (0.51 – 1.42)	0.547
Bangladeshi	0.73 (0.39 – 1.36)	0.327	0.71 (0.38 – 1.35)	0.303	0.72 (0.38 – 1.37)	0.315	0.66 (0.33 – 1.32)	0.241
Black Caribbean	3.90 (2.24 – 6.79)	<0.001	3.99 (2.24 – 7.11)	<0.001	4.08 (2.29 – 7.25)	<0.001	4.83 (2.69 – 8.68)	<0.001
Black African	2.26 (1.31 – 3.93)	0.005	2.29 (1.30 – 4.02)	0.004	2.91 (1.65 – 5.13)	<0.001	2.79 (1.52 – 5.11)	0.001
Age (ref: 16-29)								
30-39	0.19 (0.16 – 0.22)	<0.001	0.18 (0.16 – 0.22)	<0.001	0.18 (0.16 – 0.22)	<0.001	0.27 (0.23 – 0.33)	<0.001
40-49	0.23 (0.20 – 0.26)	<0.001	0.22 (0.19 – 0.25)	<0.001	0.22 (0.19 – 0.25)	<0.001	0.32 (0.27 – 0.38)	<0.001
50-64	0.19 (0.17 – 0.22)	<0.001	0.19 (0.16 – 0.22)	<0.001	0.19 (0.16 – 0.22)	<0.001	0.28 (0.24 – 0.33)	<0.001
65+	0.44 (0.38 – 0.51)	<0.001	0.45 (0.39 – 0.52)	<0.001	0.45 (0.39 – 0.52)	<0.001	0.62 (0.49 – 0.78)	<0.001
Mental Illness (ref: GHQ <4)								
GHQ >=4			2.71 (2.38 – 3.09)	<0.001	2.71 (2.38 – 3.09)	<0.001	2.32 (2.02 – 2.66)	<0.001
Country of Birth (ref: UK)								
Non UK					0.72 (0.56 – 0.93)	0.013	0.80 (0.61 – 1.04)	0.096
Household Equivalised Income (ref: Quintile 1[Lowest])								
Quintile 2							0.67 (0.57 – 0.78)	<0.001
Quintile 3							0.51 (0.44 – 0.60)	<0.001
Quintile 4							0.34 (0.29 – 0.40)	<0.001
Quintile 5 (Highest)							0.20 (0.17 – 0.24)	<0.001
Highest Educational Qualification (ref: Degree)								
Higher Degree							1.13 (0.96 – 1.33)*	0.156
A-Level							1.13 (0.96 – 1.33)*	0.132
GCSE							0.95 (0.82 – 1.11)	0.526
Other Qualification							0.98 (0.81 – 1.18)	0.805
No Qualifications							1.04 (0.88 – 1.24)	0.639
Employment status (ref: Employed)								
Unemployed							2.08 (1.55 – 2.78)	<0.001
Retired							0.77 (0.65 – 0.92)	0.003
Looking after home or family							0.47 (0.39 – 0.56)	<0.001
Full time student							6.53 (4.35 – 9.80)	<0.001
Long term sick or other							1.82 (1.38 – 2.40)	<0.001

[a] Reference category; *The RRRs and 95% CIs for Higher Degree and A-Level are the same; this is not a typographical error.

Risk of being socially isolated, compared with well supported. In Model 1, the relative risk ratios (RRRs) for being in the socially isolated class, compared with the well supported class, were lower for White British (RRR = 0.21, CI = 0.13 – 0.33, p<0.001), White Irish (RRR = 0.22, CI = 0.10 – 0.47, p=0.001), and Indian (RRR = 0.45, CI = 0.25 – 0.82, p=0.011) women compared with Pakistani women i.e. White British, White Irish and Indian women had a lower risk of being socially isolated than Pakistani women. There was also an association with age: women aged 30 to 39 years (RRR = 0.56, CI = 0.41 – 0.76, p<0.001), and 40 to 49 years (RRR = 0.71, CI = 0.53 – 0.95, p=0.022) had a lower risk of being socially isolated, compared with being well supported, relative to women aged 16 to 29 years. Women aged 65 or over had an increased risk (RRR = 1.64, CI = 1.24 – 2.15, p=0.001) of being socially isolated, compared with being well supported, relative to the youngest age group. Model 2 added mental illness to the covariates in Model 1; women with mental illness were more likely to be socially isolated rather than well supported (RRR = 4.22, CI = 3.46 – 5.14, p<0.001). Country of birth had no association with the risk of being socially isolated, compared with being well supported, when it was added in Model 3 (RRR = 0.79, CI = 0.56 – 1.11, p=0.175); ethnic group and age differences remained in Models 2 and 3.

Socio-economic status variables were added in Model 4. Women in higher levels of household income (relative to the lowest quintile) had decreased RRRs for being socially isolated, compared with being well supported. Women with the lowest levels of education had increased RRRs for being socially isolated, compared with being well supported (GCSE = 1.49, CI = 1.05 – 2.11, p=0.026; other qualifications RRR = 1.51, CI = 1.01 – 2.27, p=0.046; No qualifications RRR = 2.47, CI = 1.68 – 3.64, p<0.001). Women who were unemployed (RRR = 2.80, CI = 1.85 – 4.24, p<0.001), or not working due to long term sickness or disability (RRR = 3.20, CI = 2.14 – 4.79, p<0.001) had increased risks of being socially isolated, compared with being well supported. In this model, there was no

longer a difference in the risk of being socially isolated between Indian and Pakistani women (RRR = 0.71, C I= 0.38-1.34, p=0.292), but the decreased risk of White British and White Irish women remained. The increased risk of social isolation for women aged over 65 was no longer evident in this model.

Risk of being inadequately supported, compared with well supported. In Model 1, White British women were less likely to be inadequately supported, compared with the well supported class, in comparison to Pakistani women (RRR = 0.48, CI = 0.34 – 0.68, p<0.001). There were no differences between Pakistani women and women of other ethnic groups. Women who were aged over 65 were less likely to be inadequately supported, compared with being well supported, relative to women in the youngest age group (RRR = 0.61, CI = 0.50 – 0.73, p<0.001). Mental illness (Model 2) was found to increase the risk of being inadequately supported, compared with being well supported (RRR = 3.04, CI = 2.65 – 3.49, p<0.001). There was no effect of country of birth when it was added in Model 3 (RRR = 1.16, CI = 0.90 – 1.48, p=0.246). The ethnic difference between White British and Pakistani women, and the reduced risk for older women remained in Models 2 and 3.

Socio-economic status variables were added in Model 4. Women in the two highest levels of household income had decreased RRRs for being inadequately supported, compared with being well supported, relative to women in the lowest household income bracket. Women with higher degrees as their highest educational qualification had an increased risk of being inadequately supported, compared with being well supported (RRR = 1.28, CI = 1.08 – 1.50, p=0.003), as did women who were unemployed (RRR = 1.46, CI = 1.05 – 2.04, p=0.026). Women who were retired had a decreased risk of being inadequately supported, compared with being well supported (RRR = 0.69, CI = 0.57 – 0.83, p<0.001). In this model the decreased risk of being inadequately supported of White British women compared with Pakistani women, remained. The reduced risk for older women was no longer evident.

Risk of being single and supported, compared with being well supported. In Model 1, White British (RRR = 0.64, CI = 0.46 – 0.89, p=0.010), and Indian (RRR = 0.62, CI = 0.40 – 0.96, p=0.039) women were at decreased risk of being single and supported, compared with being well supported, relative to Pakistani women. Black Caribbean (RRR = 3.90, CI = 2.24 – 6.79, p<0.001), and Black African (RRR = 2.26, CI = 1.31 – 3.93, p=0.005) women were at increased risk of being single and supported, compared with Pakistani women. Women in higher age bands had lower risks of being single and supported, compared with women in the youngest age band. In Model 2, mental illness was associated with an increased risk of being single and supported, compared with well supported (RRR = 2.71, CI = 2.38 – 3.09, p<0.001). Women who were born outside of the UK had a decreased risk of being single and supported, compared with being well supported (RRR = 0.72, CI = 0.56 – 0.93, p=0.013). Most of the ethnic differences observed in Models 1 and 2 remained in this model, apart from the difference between Pakistani and Indian women.

Socio-economic status variables were added in Model 4. Women in higher levels of household income had decreased RRRs for being single and supported, compared with being well supported. There were no differences in the risk of being single and supported, compared with being well supported, between women with different educational qualifications. Women who were looking after home or family had a decreased risk (RRR = 0.47, CI = 0.39 – 0.56, p<0.001) of being single and supported, compared with being well supported, in comparison to women who were employed, as did women who were retired (RRR = 0.77, CI = 0.65 – 0.92, p=0.003).Women who were full time students (RRR = 6.53, CI = 4.35 – 9.80, p<0.001), not working due to long term sickness or disability (RRR = 1.82, CI = 1.38 – 2.40, p<0.001), or were unemployed (RRR = 2.08, CI = 1.55 – 2.78, p<0.001) had increased risks of being single and supported, compared with being well supported, relative to women who were employed. In this model, there was no longer

a difference in the risk of being single and supported between White British and Pakistani women (RRR = 0.77, C I= 0.53 – 1.13, p=0.185), but the increased risks for Black Caribbean and Black African women remained.

4.4.6. Model Fit

Model fit statistics were not available in Mplus for the multinomial logistic regression models presented in the previous section (Muthen, 2015d). These models used the three step auxiliary approach using the command R3STEP in Mplus. Model fit statistics were available for the one-step approach (as outlined in section 4.3.7). However, this type of model was not used in this analysis due to problems estimating the model in Mplus.

4.5. Discussion

4.5.1. Main Findings

By using a recent nationally representative UK dataset, this study examined differences in the social support networks of Pakistani women, compared with women of other ethnic groups. Four classes of social support networks were evident in the data: well supported, single and supported, inadequately supported, and socially isolated. White British women were less likely to be in the socially isolated or inadequately supported classes, compared with Pakistani women, but there was no difference in the risk of being in the single and supported class between the two groups. White Irish women were less likely to be socially isolated than Pakistani women, but no more or less likely to be inadequately supported or single and supported. Black Caribbean and Black African women were more likely to be in the single and supported class, compared with Pakistani women, but there were no differences in the risks of being inadequately supported or socially isolated between these groups and Pakistani women. There were no differences in the social support networks of Indian and Bangladeshi women, compared with Pakistani women.

Although Indian women were less likely to be socially isolated than Pakistani women in initial models, once socioeconomic status variables were added this difference was no longer evident. Mental illness was strongly associated with the risk of being in a non-supportive network. Women with mental illness were more than three times as likely to be socially isolated rather than well supported, compared with women without mental illness. The association was weaker but still large (over two times the risk) between having a mental illness and the risk of being inadequately supported, or single and supported.

There were also patterns evident in the distribution of social support networks by socioeconomic status. Women with higher levels of household income were less likely to be socially isolated, inadequately supported or single and supported. Women with the lowest levels of educational qualifications (GCSE, other qualifications or no qualifications) were more likely to be socially isolated, compared with women with degrees. Women with higher degrees had a higher risk of being inadequately supported. However, there was no association between educational qualifications and the risk of being single and supported. Women who were unemployed were more likely to be socially isolated, inadequately supported or single and supported, compared with being well supported. Women who were not working due to long term sickness or disability were more likely to be socially isolated or single and supported, compared with being well supported. Women who were retired were less likely inadequately supported or single and supported. There were no associations between being born outside of the UK and type of social support networks.

4.5.2. Comparison with other studies

The findings of this study are consistent with some findings from other English studies that show a lack of social support in Pakistani women's networks, compared with White British and White Irish women (Calderwood & Tait, 2001; Natarajan, 2006; Stansfeld & Sproston, 2002), although the present study extends these findings to the UK context (including Wales, Scotland, and Northern Ireland, as well as England). This study

did not find a greater likelihood of Pakistani women to perceive lack of social support or negative aspects, compared with Black Caribbean women, as reported by Calderwood & Tait (2001) using the Health Survey for England (HSE) 1999, and Stansfeld and Sproston (2002) using another English survey (Ethnic Minority Psychiatric Rates in the Community, EMPIRIC). Nor did this study find higher levels of negative support for Bangladeshi women, compared with Pakistani women, also reported by Stansfeld and Sproston (2002). The differences in these findings could be due to the differences in the definition of social support amongst the three surveys: lack of support from friends and family in HSE, negative aspects of support from closest person in EMPIRIC, and likelihood of being socially isolated/ inadequately supported based on a latent class analysis using Understanding Society for this study.

Overall, this study points to some lack of social support and social isolation for Pakistani women that is greater than for White majority women. However, the picture is not one of complete disadvantage for Pakistani women, compared with all other ethnic groups. This is in opposition to many localised studies of Pakistani women that have suggested that social isolation in this group is much worse than for women in other ethnic groups, albeit often without comparative data (Chaudhry et al., 2012; Gask et al., 2011; Gater et al., 2009). Within the wider health, social care and social support literature, many studies in the UK investigating the support available to Pakistani carers of older people have shown that the support available in their social networks does not differ greatly from other ethnic groups (Katbamna et al., 2004; Murray & Brown, 1998; Victor, Martin, & Zubair, 2012; Willis et al., 2013). This suggests that Pakistani women's networks do not have added advantages of social support over and above that of many other ethnic minority groups nor are Pakistani women socially isolated to greater degrees. This is important as this is different from the case for some ethnic minority groups in other countries e.g. non-US born Mexican Americans have greater family support than other ethnic groups

(Almeida, Molnar, Kawachi, & Subramanian, 2009). This study also contributes to the body of literature in the UK that shows that social support differs by ethnic group, even after other factors known to be associated with social support are taken into account (Klineberg et al., 2006; Smyth, Siriwardhana, Hotopf, & Hatch, 2015; Willis et al., 2013; Zhang & Ta, 2009).

Mental illness showed a strong association with social support networks. This adds to the large body of research that has shown the positive association between good mental health and perceived satisfactory social support (Almeida et al., 2009; Kawachi & Berkman, 2001; Kessler et al., 1985; Schaefer, Coyne, & Lazarus, 1981; Wethington & Kessler, 1986). However, adding mental illness to models did not explain any of the ethnic differences that were found in the likelihood of having different types of social support networks. Higher levels of socioeconomic status were overall associated with more supportive networks. This is consistent with other studies that have found this same association (Almeida et al., 2009; House, Umberson, & Landis, 1988; Natarajan, 2006; Taylor & Seeman, 1999). These socioeconomic characteristics did not explain the ethnic difference between Pakistani women, and White majority, Black Caribbean and Black African women.

4.5.3. Strengths and Limitations

This study used the most recent data available in the UK on ethnicity, social support networks, and mental illness from a large nationally representative dataset, allowing the findings to be generalised to the population of the UK. The measures of social support were more comprehensive than measures used in other UK surveys, with this study providing detail on support from three separate sources (partner, relatives, and friends), and on positive and negative aspects of support.

There are a number of limitations to the study that must be acknowledged. The study used a cross-sectional design of study, hence the findings report on associations

between ethnic group, mental illness and social support networks. The study does not suggest there is a causal pathway from mental illness to social support, in that direction. Indeed, many longitudinal studies have shown that the influence is most likely in the other direction (Billings & Moos, 1982; Holden, Dobson, Ware, Hockey, & Lee, 2015; Kaplan, Robert, Camacho, & Coyne, 1987; Rothon, Goodwin, & Stansfeld, 2012; Turner & Marino, 1994). However, mental illness may exert influence on social support and other social networks characteristic over a longer time period (Becker et al., 1998; Green, Hayes, Dickinson, Whittaker, & Gilheany, 2002).

The association between social support and mental illness was not estimated separately for each ethnic group; this is important as previous research in the United States suggests that this relationship varies by ethnic group (Almeida et al., 2009, 2011). However, it was not done here because the specific aim of this chapter was to give a description of Pakistani women's social support networks, compared with women of other ethnic groups. In Chapter 6, the association between social support and mental illness, and whether this association differs between ethnic groups, are both estimated as part of a model to explain ethnic differences in mental health service use.

The analysis presented in this chapter only used women for whom data was available on all of the variables of interest. This may lead to biased estimates if the likelihood of data being missing is dependent on the value of the variable in question (e.g. if missingness in ethnic group is dependent on the ethnic group of a person) (Schafer, 1999; Sterne et al., 2009). For example, there was an unusually high level of mental illness for Bangladeshi women, which was not in line with findings from other large national surveys (e.g. in the EMPIRIC survey, they had the lowest rate of mental illness out of all ethnic groups (Weich & McManus, 2002)). One possible reason for elevated rates in this study is the high level of missing data for Bangladeshi women on the mental illness measurement instrument (51.3% missing on GHQ for Bangladeshi women compared with 15.7% for

women overall), if women who had missing data were not missing at random (MAR) but in fact their missingness was related to the level of mental illness. This would mean that the level of mental illness for Bangladeshi women was overestimated.

Geographical location of women was not considered as an influencing factor in this study. However it is possible that where women live has an impact on social support networks. This could be related to the deprivation within an area, as previous research suggests that living in deprived areas can have a detrimental effect on social support that is available to people (Cattell, 2001), hence it is possible that Pakistani women living in deprived areas have less support than women living in affluent areas. One other possible geographical influencing factor on social support networks may be the (own) ethnic density of the area in which women live. Previous research that has been conducted to test for the protective effects of living in own ethnic group dense areas on mental illness, has shown that ethnic density is not protective of mental health for Pakistani people (in contrast to the finding for most other ethnic minority groups), and this may have been because there was no difference in social support networks by increasing ethnic density for Pakistani people (Das-Munshi et al., 2010). However it is possible that the association is different for men and women, a possibility that was not tested in Das-Munshi and colleagues' study.

4.5.4. Conclusions and Implications

Pakistani women experienced lower levels of social support than White majority women, but more than Black Caribbean and Black African women. There were no differences in the social support networks of Pakistani women, compared with Indian and Bangladeshi women. The finding that the distribution of social support was not the same for Pakistani women as for women in some other ethnic groups, is important for the analysis that will be undertaken in Chapters 5 and 6 of this thesis, which investigate the association between social support (as well as other aspects of social networks) and mental

health service use, and how this association varies between Pakistani women and women of other ethnic groups.

The finding that social support networks are related to mental illness in this population, is also an important one as further analyses in this thesis (Chapter 6) will test a possible mechanism via which aspects of social networks operate on mental health service use.

Chapter 5: The relationship between social networks and mental health service use for Pakistani women, compared with women of other ethnic groups

5.1. Introduction

In the UK, South Asian (Pakistani, Indian, and Bangladeshi) women are one group for whom there are low rates of usage of outpatient mental health services (C. Cooper et al., 2013; J. Cooper et al., 2010). Within this group, Pakistani women may be particularly disadvantaged, due to high levels of mental illness, (Chaudhry et al., 2012; Gater et al., 2009) but low levels of service use (Glover & Evison, 2009; Lloyd & Fuller, 2002). The systematic review (reported in Chapter 3) carried out for this thesis showed that Pakistani women have lower rates of outpatient mental health service use than White and Black Caribbean women but the rates were no different between Pakistani, Bangladeshi and Indian women. Much of the research incorporated into this review did not account for women's level of mental illness in the calculation of usage rates. Hence, it is possible that the rates of use for Pakistani women particularly may have been overestimated due to their higher (than Indian and Bangladeshi women) mental illness rates (Natarajan, 2006; Weich et al., 2004).

A range of potential explanations for these ethnic differences in rates of service use have been explored. There is some evidence that Pakistani women are less likely to be referred to specialist mental health services (Burman et al., 2002), that NHS services may be inadequate in addressing religious, cultural and language needs (Bowl, 2007b; Chew-Graham et al., 2002), and that Pakistani women may be fearful that confidentiality may not be maintained (Gilbert et al., 2004). These findings reflect the tendency of research on mental health service use to focus on how individuals (patients) in conjunction with systems (NHS) drive the outcomes of mental health care pathways. The social aspect of help-seeking; the way in which decisions and actions are influenced by the people closest

to us, are important (Gourash, 1978; Pescosolido, 1992, 2006, 2011) but have been rarely focussed on in the UK context, and have not been considered as a potential explanation for the under-use of mental health services by Pakistani women.

Social networks may be particularly important for groups that are alienated from mental health service systems, both in terms of their content (the people in them – friends, family) and their function (provision of support, exchange of information about illness and services). Certainly, research in the other countries has shown that people are less likely to use mental health services if they perceive high levels of social support within networks (Golding & Wells, 1990; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008), if they have larger networks (Albizu-Garcia et al., 2001; Pescosolido, Wright, et al., 1998; Sherbourne, 1988; Woodward et al., 2008), or they have high levels of contact with relatives (Kouzis & Eaton, 1998; Sherbourne, 1988).

Although the relationship between aspects of social networks and mental health service use has been established through research (in countries other than the UK) there has been very little consideration of how social networks may operate differently across ethnic groups. One study in the US conducted by Chang and colleagues (Chang et al., 2014) that investigated the association between family support and mental health service use for White Americans compared with Latino Americans and Asian Americans, found that there was no differential effect by ethnic group. However, they also reported that family support was no different between White Americans and Latino Americans. Given the results from Chapter 4 of this thesis that social support is less for Pakistani women, than women from White majority groups, and an indication that levels of stigma may be higher in Pakistani women than other ethnic groups, it may also be the case that aspects of social networks have different consequences for mental health service use, for them compared to White majority women, and potentially other ethnic groups.

In order to address the limitations of previous studies, this study uses a large nationally representative dataset collected in England (Ethnic Minority Psychiatric Illness Rates in the Community [EMPIRIC]) to estimate Pakistani women's rates of outpatient mental health service use, taking into account levels of mental illness, and different aspects of social networks (such as perceived support, size and contact with relatives and friends). The research questions are outlined in the following section.

5.2. Research Questions

i. How does the use of mental health services for Pakistani women in England compare with women of other ethnic groups?

ii. Are social networks associated with the use of mental health services?

iii. Does this association differ for Pakistani women, compared with women of other ethnic groups?

5.3. Methods

5.3.1. Data: Design and Sample

Data from Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC) were used (National Centre for Social Research & University College London, 2003). EMPIRIC is a nationally representative cross-sectional survey of adults living in private households (aged 16 to 74 years) conducted in England in 2000 (n=4,281). The aim of the survey was to report the level of mental illness in five ethnic minority groups (White Irish, Black Caribbean, Bangladeshi, Indian and Pakistani), compared with the White majority population, as well as collecting information on physical health, social support and usage of health services.

The survey followed up White participants (who agreed to be re-contacted) from the Health Survey for England (HSE) 1998 (Erens & Primatesta, 1999) and ethnic minority participants (who agreed to be re-contacted) from the Health Survey for England (HSE) 1999 (Erens et al., 2000). Out of all participants in both surveys, 92% agreed to be re-interviewed. Both of these cross-sectional surveys used multi-stage stratified random sampling to recruit respondents, in order to ensure that the achieved sample was representative of the population of England. The HSE 1998 used the small user Postcode Address File (PAF) as its sampling frame (Erens & Primatesta, 1999). The primary sampling unit (PSU) was postal sector. The full list of postal sectors was stratified by Health Authority[1], and by percent of households with head of household in a non-manual occupation within Health Authorities, in order to achieve an accurate balance of households within region. From this stratified list, 720 postal sectors were systematically selected. The probability of selection for each postal sector was the reciprocal of the number of addresses in the sector. Within each PSU, 19 addresses (secondary sampling unit, SSU) were selected using systematic random sampling. At each address, all individuals aged over two were eligible to be interviewed. In order to limit burden on children, a maximum of two children per household were selected. If addresses contained more than one household, all households up to a maximum of three were eligible for inclusion.

The HSE 1999 consisted of three different samples. The first was the general population sample, designed to be representative of the whole population of England. For this sample, the same method of sampling as described above for the HSE 1998 was followed, resulting in 312 PSUs and 21 SSUs per PSU; this sample was not followed up for EMPIRIC. The second sample consisted of Chinese participants; these were not re-

[1] In 1998, there were 8 health authorities in England, which were based on groups of neighbouring counties, e.g. the North West Health Authority consisted of Cheshire, Greater Manchester, Lancashire, Merseyside, South Cumbria, and Glossop.

contacted for the EMPIRIC survey, and hence are not discussed any further here[1]. The third sample was the ethnic minority boost sample, designed to over-sample people from Irish, Black Caribbean, Pakistani, Bangladeshi and Indian groups. In order to do this, all postal sectors in England were assigned to one of eight strata (A to H) that had differing levels of ethnic minority concentration (see Table 5.1). Stratum H was not sampled for this part of the sample due to low levels of ethnic minority residents, and Stratum G was used to select Irish participants only. Postal sectors were systematically randomly sampled within strata to yield 408 postal sectors (PSUs). Addresses were systematically selected from postal sectors in Strata A to G. Screening was carried out at selected addresses in Strata A, B, C, D and G for eligible participants. For addresses in Strata E and F, with very low ethnic minority concentrations, focussed enumeration was used (C. Brown & Ritchie, 1981). This technique is used to increase the sample number for target groups. According to this method, interviewers screened for eligibility at the selected address, and in addition, asked residents of the sampled address if anybody from the target ethnic groups lived at two houses either side of the sampled address. If any of the adjacent houses contained ethnic minority groups (according to the resident from the sampled address), the interviewer went to this address and screened the residents. For households that were included in the survey, a maximum of four adults and three children were interviewed. The reduction in the number of adults surveyed (compared with the general population sample) was due to ethnic minority households being on average larger than the general population. A maximum of three households per address were sampled.

[1] Chinese participants were re-sampled from a 1998 survey, Health and Lifestyle of the Chinese population in England (Sproston, Pitson, Whitfield, & Walker, 1999).

Table 5.1: Strata used for ethnic minority boost sample in HSE 1999.
Ethnic concentration based on 1991 census data for England. Adapted from Erens et al., (2000)

Stratum	Ethnic minority concentration
Strata A – D consisted of postal sectors where at least 10% of residents were Black Caribbean, Indian, Pakistani or Bangladeshi. Additional criteria for strata are given below	
A	>=10% of residents were Indian
B	Not in Stratum A & >=5% of residents were Bangladeshi
C	Not in Stratum A or B & >=2.5% of residents were Pakistani
D	All other sectors meeting 10% criteria but not in Strata A, B, or C
Strata E and F consisted of postal sectors where at least 1% but less than 10% of residents were Black Caribbean, Indian or Pakistani. Additional criteria for strata are given below	
E	>=1% of residents were Bangladeshi
F	< 1% of residents were Bangladeshi
G	< 1% of residents were Black Caribbean, Indian, Pakistani or Bangladeshi & >=1.5% of residents were Irish
H	All other postal sectors not in Strata A to G

Overall, 7,009 individuals who took part in the original surveys were contacted and 6,271 were eligible for re-interview. Of these 4,281 took part in the survey (response rate = 68.2%) (Sproston & Nazroo, 2002). The survey was carried out by trained interviewers using Computer Assisted Personal Interviewing (CAPI). Most interviews were conducted in English (83%). For participants who were not able to complete an interview in English, professional interpreters were provided. Study materials were translated into six languages for use with these participants: Hindi, Gujarati, Punjabi, Urdu, Bengali, and Sylheti (Sproston & Nazroo, 2002).

The EMPIRIC dataset that is provided by the UK Data Service contains weights that account for both the design of the HSE 1999 and associated non-response (for ethnic minority participants), and the non-response to the EMPIRIC survey (all participants). The ethnic minority weights from HSE 1999 accounted for the unequal probabilities of: selection of postcode sector, selection of households, and selection of adults within households. The weights for non-response to EMPIRIC were calculated by using logistic regression to model the probability of response to EMPIRIC using a range of demographic and health-related variables, primary sampling unit (postcode sector), and household level variables. For ethnic minority respondents, the reciprocal of this response probability was multiplied by the weights from HSE 1999, to produce a weight to be used with the

EMPIRIC sample. For White respondents that were sampled from the HSE 1998, weighting is not applied at the HSE stage as the achieved sample is thought to have been successfully drawn as an equal probability sample thereby making weighting unnecessary (Erens et al., 2001; Sproston & Nazroo, 2002). Therefore for White respondents, the non-response weight calculated for EMPIRIC (calculated in the same way for all participants) is the weight used for analysis, without any further adjustment.

In the EMPIRIC dataset two weights are provided. The first (named 'nonreswt' in the dataset) is to be used when analysing individual ethnic minority groups separately from the rest of the sample. The second (named 'scalewt' in the dataset) is provided to undertake analysis with the full sample; it weights each ethnic group to its proportion in the population. The latter weight is used for analyses in this chapter, apart from for individual ethnic group statistical models that are reported in sections 5.4.4 and 5.4.5; these use the former weight. In order to use weights in the analysis, the 'pweight' subcommand was employed in Stata 13 (StataCorp, 2013). For the current analysis, only women were selected (n=2,340). During the analysis 80 women (3.4%) were dropped due to missing data on one or more covariates, giving a sample size of 2,260.

5.3.2. Outcome Variable: Mental Health Service Use

Within the dataset, there were three separate pieces of information regarding mental health service use: consultation with a doctor for an emotional or stress-related problem, seeing a counsellor or psychologist, and seeing a Community Psychiatric Nurse (CPN). The interview questions are shown in Table 5.2. In the UK, a CPN is typically provided by community mental health outpatient services to people suffering moderate to severe mental distress. In order to prepare the data for modelling, a binary variable was created for each of the mental health service use variables. Only a small number of women had seen a CPN (n=25, 1.1%), which was too small a number to model as an outcome category. Therefore this category of service use was combined with "seen a counsellor or psychologist", as

these services are representative of secondary care services that are available within the NHS in the UK. This resulted in two categories (both binary) of service use: consulted a doctor for emotional or stress-related problems in the past 6 months, and used secondary care services (counsellor, psychologist or CPN) in the past 6 months.

Table 5.2: Questions in the EMPIRIC survey measuring mental health service use. Source: EMPIRIC Data User Guide (National Centre for Social Research & University College London, 2003)

Questions	**Answer categories (Interviewers instructed to 'CODE ALL THAT APPLY')**
I would like to ask you about the last time you spoke to or visited a doctor on your own behalf. What was the matter with you? *[Only asked to participants that said they had seen a doctor in the last 6 months in the preceding question]*	A physical problem A stress related or emotional problem Other
Here is a list of health services. Have you used any of these services in the past 6 months?	Child health/ baby clinic Well woman clinic Travel vaccination clinic Practice based nurse District Nurse Midwife Health Visitor Community Psychiatric Nurse None of these
And what about the health services on this card, have you used any of these in the past 6 months?	Physiotherapist Chiropodist Dietician Counsellor/ Psychologist Cervical screening Breast screening None of these

5.3.3. Ethnic Group

Ethnic group was self-defined by participants using the Census 1991 categories, apart from White Irish participants who were classified as White Irish if they were born in Ireland or had a parent born in Ireland (National Centre for Social Research & University College London, 2003). The six ethnic groups sampled for EMPIRIC were: White, White Irish, Black Caribbean, Bangladeshi, Indian and Pakistani. Ethnic group was used as a categorical variable with Pakistani ethnic group as the reference category.

5.3.4. Mental Illness

Mental illness was measured using the Clinical Interview Schedule Revised (CIS-R: Lewis, Pelosi, Araya, & Dunn, 1992). This scale was designed to be used in research settings and asks about many symptoms of mental illness which can be used to derive a classification of mental disorders commensurate with ICD-10 (International Classification of Diseases) diagnoses. The following symptomatology is covered in the questionnaire: somatisation, fatigue, concentration and forgetfulness, sleep disturbance, irritability, physical health worries, depressive mood and thoughts, worry and anxiety, phobias, panic attacks, compulsive behaviours, and obsessional thoughts. Psychotic symptoms and suicidal ideation are not covered by this measure (they are covered elsewhere in the EMPIRIC interview schedule), but due to the extensive coverage of the CIS-R, it is likely that individuals with either psychosis or suicidal ideation, would show signs of mental illness as measured by CIS-R.

The CIS-R has a scoring method which results in a score of between 0 and 57. In the EMPIRIC dataset, scores for women ranged from 0 to 44. However, this variable was highly positively skewed with large floor effects (25% of women scored 0). Hence, the use of this variable as a continuous explanatory variable was problematic. Therefore, a dichotomised version of this variable was used, whereby those who scored 12 or greater were regarded as having a mental illness that warranted clinical intervention; this cut off point is recommended by the authors of the instrument (Lewis et al., 1992). Women who scored between 0 and 11 were coded as 0, and those who scored between 12 and 44 were coded as 1. The data showed that 6% (unweighted) of women scoring below 12 on the CIS-R (considered as not meeting criteria for mental illness) used mental health services. Although this figure was much less than those women who scored more than 12 (24%), it was high enough to warrant inclusion of all women in the analysis, regardless of CIS-R

score. Therefore all women were included in the analysis and mental illness was controlled for by using CIS-R score as a dichotomous variable with the cut point at 12.

5.3.5. Social Network Measures

Four aspects of social networks were measured in the EMPIRIC dataset: size, relationships within the network, contact with friends and relatives, and perceived support from closest people. The data used in the previous chapter were quite different, covering social support from three different sources within social networks (partners, relatives and friends), which means that the approach used here is not directly comparable with that used in Chapter 4. The implications of this will be returned to in the overall conclusion of the thesis (Chapter 7). The four measures available in the EMPIRIC dataset represent different aspects of social networks which have been kept separate in order to assess the association of each qualitatively distinct aspect of networks with mental health service use. The approach used here, consequently, focuses on the network dimensions of size, content, contact and perceived support, as described below.

Network Size. The size of the network was measured by the question "How many people do you feel close to?" This was a continuous variable ranging from 0 to 58. The distribution was heavily positively skewed (weighted mean = 5.70, SE = 0.19; weighted median = 5). Therefore a categorical variable was created with three categories; these can be thought of as representing small (0 to 2 people), medium (3 to 7 people) and large networks (8 or more people).

Network Content: relationships within the network. The relationships of the two closest people to the respondent were collected ("Who have you felt closest to in the last 12 months?" and "Who have you felt next closest to the in the last 12 months?). Participants chose from 16 categories for these relationships, 12 of which were family relationships, 3 friendships, and 1 "other" type of relationship. For the analysis, a variable with 6 categories was created, which gave an overall summary of the nature of the two

closest people. The categories were: spouse and relative, spouse and friend, friend and relative, relatives, friends, and one or no close people. In order to create this variable, other relationships were recoded into the "friends" category[1].

Network Contact. This was measured with two separate questions relating to contact with relatives and contact with friends. Contact with relatives was measured with the question "How often do you regularly visit or are visited by [these] relatives?" This variable was recoded from 5 response categories (almost daily, about once a week, about once a month, once every few months, never/ almost never) to a three-category variable where frequent face to face contact was defined as seeing a relative once a week or more often (0: no frequent face to face contact, 1: frequent face to face contact, 2: no relatives outside the household). Contact with friends was measured with the question "How often do you regularly visit or are visited by [these] friends?" This variable was recoded in the same way as the variable that measured contact with relatives (0: no frequent contact, 1: frequent face to face contact, 2: no friends).

Network perceived social support. Perceived social support (what network members were perceived to do for the participant) was measured using the Close Persons Questionnaire (CPQ) (Stansfeld & Marmot, 1992). Perceived social support from the participants' nominated two closest people was measured by 15 items (see Table 5.3). Previous studies have added the scores of the items relating to each of the three domains proposed by the authors: (1) confiding and emotional support, (2) practical support, and (3) negative aspects of support (e.g. Fuhrer & Stansfeld, 2002; Fuhrer, Stansfeld, Chemali, & Shipley, 1999). However, for a measurement scale such as this, it is methodologically more appropriate to conduct a factor analysis in order to identify the underlying latent variables which were measured by the 15 items. A factor analysis is a method by which to investigate if a number of correlated observed variables (in this case, the items in the Close

[1] For the first closest person, there were 6 participants who identified the closest relationship as "other" and for the second closest person, this figure was 7. As these counts were low it was not feasible to use other relationships as a separate category.

Persons Questionnaire) are linearly related to a smaller number of unobserved latent variables (in this case, aspects of social support) (Preacher & MacCallum, 2003; Rencher & Christensen, 2012). The latent variables are thought to be the underlying cause of the observed variables, and the extracted latent variables (factors) can provide useful information as to the underlying domains of a questionnaire such as the CPQ (Floyd & Widaman, 1995).

Table 5.3: Close Persons Questionnaire items (Source: Stansfeld & Marmot, 1992)

"Thinking about the person that you are closest to, please say how you would rate the practical and emotional support they have provided to you in the last 12 months. How much in the last 12 months…" Answer options: 1: Not at all, 2: A little, 3: Quite a lot, 4: A great deal.	
Item no.	**Question**
1	…did this person give you information, suggestions and guidance that you found helpful?
2	…could you rely on this person? Was this person there when you needed them?
3	…did this person make you feel good about yourself?
4	…did you share interests, hobbies and fun with this person?
5	…did this person give you worries, problems and stress?
6	…did you want to confide in, talk frankly or share feelings with this person?
7	…did you confide in this person?
8	…did you trust this person with your most personal worries and problems?
9	…would you have liked to have confided more in this person?
10	…did talking to this person make things worse?
11	…did he/she talk about his/her personal worries with you?
12	…did you need practical help from this person with major things, for example looking after you when ill, help with finances, children?
13	…did this person give you practical help with major things?
14	…would you have liked more practical help with major things from this person?
15	…did this person give you practical help with small things when you needed it, for example, chores, shopping, watering plants etc. ?

The factor analysis was conducted on 12 of the 15 items of the CPQ, as three of them (6, 11 and 12, see Table 5.3) were not appropriate measures of perceived social support. Items 6 and 12 do not measure perceived social support: rather they measure participants' desire for support. Item 11 was excluded because it measured whether the participant *provided* social support as opposed to receiving it. Separate factor analyses were conducted for the scores relating to the first and second closest persons. As the

categories of response for these items were Likert scales items, a polychoric[1] correlation matrix was generated for the 12 items and an exploratory factor analysis was conducted on the matrix scores (Holgado–Tello, Chacón–Moscoso, Barbero–García, & Vila–Abad, 2008). Analysis was conducted in Stata 13 (StataCorp, 2013).

First Closest Person: The polychoric correlation matrix generated from the scores given to the first closest person, is shown in Appendix 5.1. A factor analysis using the principal factor method was performed on this matrix. This method is most appropriate when data (such as the data in question: ordinal response items) are not multivariate normally distributed (Fabrigar, Wegener, Maccallum, & Strahan, 1999). The subjective scree test (Gorsuch, 1983 cited in Preacher & MacCallum, 2003:23) suggests to keep as many factors before the last large drop in eigenvalues in the scree plot (at the "elbow"). Investigation of the screeplot for this solution showed that a two factor solution was optimal (see Figure 5.1). Further, The Kaiser-Meyer-Olkin (KMO) statistic (which measures sampling adequacy) for the analysis was 0.814, suggesting that a factor analysis was suitable for these data; a value of 0.5 or higher indicates that a factor analysis is an appropriate method (Kaiser, 1974). Further, none of the individual items had a KMO statistic of below 0.5.

A three factor solution was also investigated as most analysis that has been conducted with this questionnaire has assumed that there are three underlying constructs: confiding and emotional, practical, and negative aspects of support. However, it became apparent that the items did not map neatly onto these three aspects of social support. In the three-factor solution, factor 2 which seemed to measure practical support, also had high loadings from items measuring negative aspects of support (see Appendix 5.2), so was not conceptually robust. A four factor solution was also fitted, but in this solution, factors 2, 3, and 4 only had loadings from two items each (factor solution not shown). A factor with

[1] Polychoric correlation coefficients are used for Likert scale or ordinal response items.

loadings from less than three items is thought to be “weak and unstable” (Costello & Osborne, 2005: 5), and hence a four factor solution was not retained.

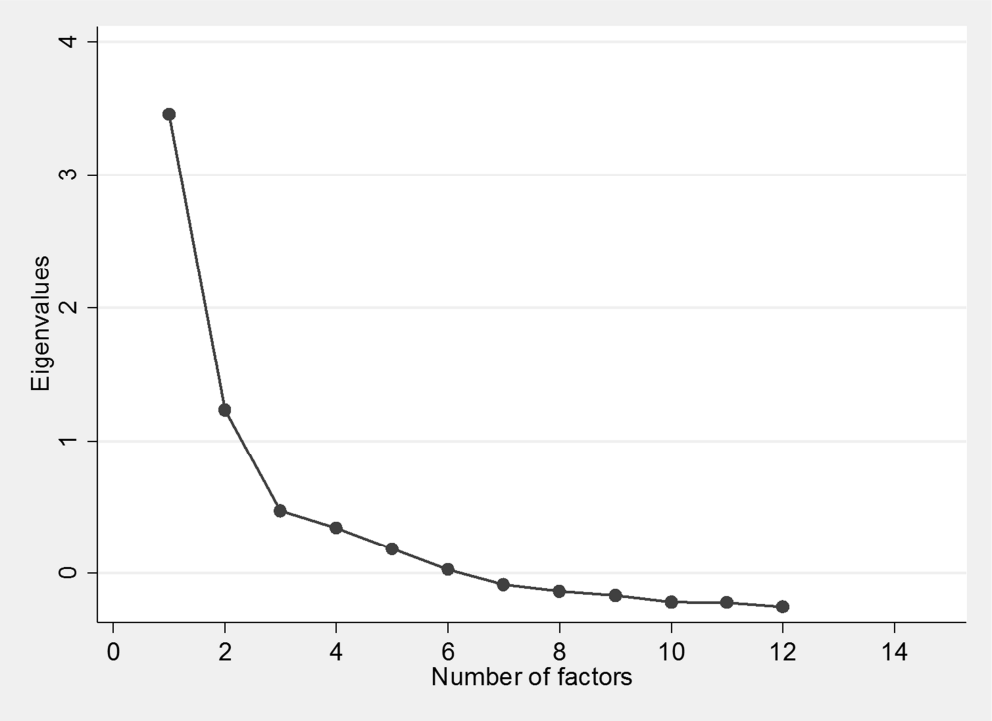

Figure 5.1: Screeplot for Factor Analysis for First Closest Person

Therefore, the two factor solution was retained and oblimax (oblique) rotation was applied. This method of rotation allows the factors to be correlated with each other, which is a reasonable assumption for different aspects of support (Preacher & MacCallum, 2003). The factor loadings for this solution are shown in Table 5.4. Factor 1 had high loadings from the items that measured positive aspects of support (both emotional and practical) and factor 2 captured the inadequacy of emotional and practical support. The correlation between the two factors was 0.157.

Table 5.4: Factor loadings from 2 factor solution for First Closest Person. (High loadings [>~0.5] are shaded in grey)

Close Persons Questionnaire Items	Factor 1	Factor 2
	Positive aspects of support	Inadequate support
1. Give you information, suggestions & guidance?	0.738	-0.044
2. Rely on this person?	0.741	-0.144
3. Make you feel good about yourself?	0.666	-0.185
4. Share interests, hobbies with person?	0.548	0.020
5. Give you worries, problems and stress?	-0.108	0.247
6. Confide in this person?	0.680	-0.017
7. Trust this person with most personal worries?	0.646	-0.068
8. Liked to have confided more in this person?	-0.182	0.480
9. Talking to this person make things worse?	-0.243	0.516
10. Give you practical help with major things?	0.573	0.375
11. Liked more practical help with major things from person?	-0.130	0.643
12. Give you practical help with small things?	0.510	0.301

Second Closest Person. The same method of factor analysis was followed for the second closest person. The screeplot suggested that two factors were the optimal number for the analysis (see Figure 5.2). The KMO statistic for this analysis was 0.781 and the 12 individual items had a KMO value of 0.5 or higher, suggesting that the factor analysis was appropriate for the data. The polychoric correlation matrix of the items for the second closest person is shown in Appendix 5.3. The two factor solution using the principal factor method and oblimax (oblique) rotation is shown in Table 5.5. The factor loadings followed the same pattern as the loadings that were obtained in the analysis for the First Closest Person. The correlation between the two factors was 0.143.

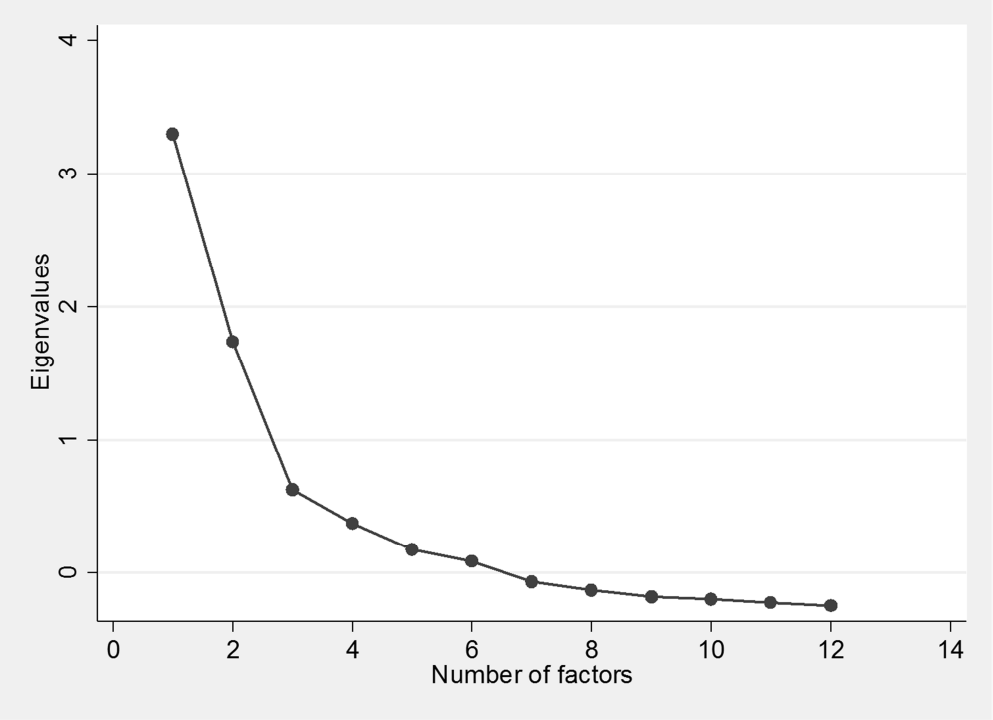

Figure 5.2: Screeplot for Factor Analysis for Second Closest Person

Table 5.5: Factor loadings from 2 factor solution for Second Closest Person (N.B. High loadings [>0.5] are shaded in grey)

Close Persons Questionnaire Items	**Factor 1**	**Factor 2**
	Positive aspects of support	**Inadequate support**
1. Give you information, suggestions & guidance?	0.747	-0.004
2. Rely on this person?	0.731	-0.112
3. Make you feel good about yourself?	0.685	-0.171
4. Share interests, hobbies with person?	0.528	0.039
5. Give you worries, problems and stress?	-0.055	0.392
6. Confide in this person?	0.670	0.058
7. Trust this person with most personal worries?	0.647	-0.042
8. Liked to have confided more in this person?	-0.026	0.574
9. Talking to this person make things worse?	-0.130	0.629
10. Give you practical help with major things?	0.551	0.438
11. Liked more practical help with major things from person?	<0.001	0.688
12. Give you practical help with small things?	0.499	0.397

From the two factor analyses described above, four factor scores (new variables) were created; one for each of the two closest persons on two aspects of support (positive aspects of support and inadequate support). The scores were created by the regression

method, whereby each factor was calculated by weighting the score on each item by its respective factor loading. As an example, the calculation performed to produce the factor score for positive aspects of support from the first closest person, is shown in Equation (1).

$$Positive\ Aspects\ of\ Support = 0.738x_1 + 0.741x_2 + 0.666x_3 + 0.548x_4 - 0.108x_5 + 0.680x_6 + 0.646x_7 - 0.182x_8 - 0.243x_9 + 0.573x_{10} - 0.130x_{11} + 0.510x_{12}$$

Where $x_1 \ldots x_{12}$ represent the 12 items of the Close Persons Questionnaire. (1)

These variables were to be used in subsequent regression analyses. However, the positive support scores from the first and second closest persons were fairly highly correlated (rho = 0.30, p<0.001), as were the inadequate support scores (rho = 0.40, p<0.001). Hence it was preferable to use only one out of the two positive support scores and one of the inadequate support scores in order to reduce multicollinearity between independent variables. The highest of the two factor scores (on each aspect of support) from the two closest people were chosen as the scores to be used, indicating the highest levels of positive support and highest levels of inadequate support perceived in the network. For participants who had only one close person, these scores were used, and for participants who said they had no close persons (n=22), they were given the lowest score in the factor scores distribution for positive support and the highest score for inadequate support. Two factors, positive and inadequate support were used in the modelling. The correlation between these two factors (-0.04) was lower than for within 'closest-person' factor correlations. As the correlation between factors was low, they could be used together without problems of collinearity in subsequent logistic regression modelling.

5.3.6. Control Variables

The analysis was adjusted for a number of variables that were thought to have an influence on mental health service use.

Foreign Born Status. A dichotomous variable was created from the information that was available on country of birth to demarcate those who were born in the UK (coded 0) with those who were not born in the UK (foreign born, coded 1).

English Proficiency. This variable measured whether someone spoke English at the survey interview and was used as an indication of a participant's proficiency in English. Participants who spoke English at the interview were classed as English proficient (coded 0) and those who did not speak English at the interview were coded as not proficient in English (coded 1).

Age. Women were aged between 16 and 74 years. Age was split into 3 categories: 16 to 34 years, 35 to 54 and 55 to 74, in order to account for the potentially non-linear effects of age.

Marital Status. Six categories were provided in the dataset: married, living as married, separated, widowed, divorced, and single or never married. These were collapsed into 3 categories as follows (original categories that were subsumed are shown in brackets): married (married, living as married), separated/ widowed/ divorced (separated, divorced or widowed) and single (single or never married).

Equivalised Household Income. Income was not measured in the EMPIRIC survey but it was measured in HSE 1999 for ethnic minority women and in HSE 1998 for White women. These data were used. The modelling process assumes that women's incomes have not changed disproportionately for women of different ethnic groups between the time of income measurement in the HSE, and the time of the EMPIRIC data collection. The equivalised household gross income was provided as a continuous variable (based on McClements household score (McClements, 1977)). Equivalisation adjusts the household income based on how many people live in the house and who they are. The McClements scale gives a weight of 0.61 to the first adult in the household and a weight of 0.39 to the spouse (Anyaegbu, 2010). Different weights are assigned to further adults in the house and

for each dependent child. The equivalised household income was calculated by dividing the household income by the sum of weights of all the people living in the household. This process takes into account, for example, that a single person living in house with £n income is financially better off than a couple with two children living in a house with £n income. As income was highly positively skewed, it was divided into weighted quintiles, where quintile 1 represented the lowest income and 5 the highest. For women for whom income was missing (16%), a separate category was created. Although this was not ideal, as it can lead to biased estimates, it was done in order to use as much of the data as possible in the analysis. Removing these cases (listwise deletion) would have also led to biased estimates, but in a different way. Multiple imputation was considered as a method to estimate the values of the missing data but this was considered to be unnecessary for an independent variable that does not form the specific focus of this thesis.

Employment Status. A derived variable was provided in the dataset which categorised employment status into the following six categories: employed, unemployed, retired, looking after home or family, full time students, and other economically inactive. Most of the women in this final category were unable to work due to sickness or disability (69/78, 88%).

Other variables considered for analysis. Highest level of educational qualifications was considered as a control variable, as previous studies have shown that this is a predictor of mental health service use (Ojeda & Bergstresser, 2008; Sosulski & Woodward, 2013). However income was used instead because it provided a more current measure of economic circumstances. Both variables could not be used because the educational qualifications variable (4 category variable: degree or higher, A-Levels, foreign qualifications, no qualifications) was correlated with household equivalised income (polychoric correlation coefficient = -0.30, $p<0.001$).

5.3.7. Statistical Modelling Approach

First, descriptive statistics (weighted) were calculated to show the distribution of usage of mental health services by ethnic group, social networks characteristics and the control variables selected for the analysis. These are reported for three outcomes: consultation with doctor for a stress-related or emotional problem in the last 6 months, secondary care services (visited a counsellor, psychologist or CPN in the last 6 months), and used any mental health service (an amalgamation of the first two outcomes). Second, the results of stepwise logistic regression models (Hosmer et al., 2013) are presented for the outcome variable, used any mental health service, as the outcome was binary (0: not used services, 1: used services).

It was hoped that visits to a doctor and secondary care services could be modelled in two separate logistic regressions. However, the number and percentage of women that had used secondary care services was very small (n=77, 3.3%). Although percentages as small as 2% can be modelled effectively using logistic regression, estimates become unreliable when the number of instances of the outcomes of interest are small (i.e. less than about 200) (Allison, 2012b). When this outcome was modelled using logistic regression, the confidence intervals for the estimates were very wide, hence indicating that the results of the model were unreliable (see Appendix 5.4 for model estimates). Therefore it was deemed inappropriate to model this outcome using logistic regression. Consideration was also given to bivariate probit modelling (Greene, 2003), which allows for two binary outcomes to be modelled together, and accounts for the correlation between the outcomes. The tetrachoric[1] correlation between visits to a doctor and secondary care services was 0.56 ($p<0.001$), suggesting that a bivariate probit modelling approach was an appropriate one. However this was not used for the same reason as above – the low percentage of women that had used secondary care services.

[1] A tetrachoric correlation coefficient is used when the items to be correlated are binary.

In order to answer research question i) (How does the usage of mental health services for Pakistani women in England, compare with women of other ethnic groups?), stepwise logistic regression modelling was used. First, three logistic regression models were fitted to the data: Model 1 adjusted for ethnic group and age (M1), the second model (M2) added mental illness to M1, and the third model (M3) added marital status, household equivalised income and employment status to M2. In order to answer research question ii) (Are social networks associated with the usage of mental health services?), four logistic regression models were fitted to the data, one for each aspect of social networks (network support (M4a), network contact (M4b), network content (M4c) and network size (M4d)). Finally, all network variables were added together in one model (M5). In order to answer research question iii) (Is this association [between social networks and usage of mental health services] the same for Pakistani women, as for women of other ethnic groups?), Model 5 was stratified by ethnicity and 6 models were estimated (Models 5a to 5f). In order to formally test if the association between social networks and mental health service use differed between ethnic groups, further models were estimated that added interaction terms of ethnic group and statistically significant network variables to Model 5, resulting in Model 6.

For each of the models presented (apart from Models 4a to 4d), the Bayesian Information Criterion (BIC[1]) was used to assess model fit. The BIC statistics takes into account the error and the number of parameters in the model, thereby penalising models that include a large number of covariates but have little reduction in log-likelihood. Lower values of BIC are indicative of a better model fit, and large reductions in BIC (>10 (Raftery, 1995)) suggest that Model n is a better fit to the data than Model n-1. For each model the reduction (or increase) in BIC between Model n (e.g. Model 2) compared with Model n-1 (Model 1) is provided. BIC reduction is not provided for Model 1 because it is

[1] BIC = (-2 x loglikelihood) + (ln(number of observations) x number of parameters).

the first model. BIC statistics were calculated using the 'fitstat' command in Stata which provides model fit statistics for categorical outcome variables (Scott Long & Freese, 2014). Log-likelihood ratio tests for nested models were not used because the log-likelihoods provided in Stata after model estimation using weights are not reliable, as the weighted nature of the sample is not taken into consideration (Sribney & StataCorp, 2005).

Analysis was undertaken in Stata 13 (StataCorp, 2013), using the 'pweight' command to take into account the complex survey design. Separate weights were used for analyses using the full sample of women (named 'scalewt' in the dataset), and analyses stratified by ethnic group (named 'nonreswt' in the dataset). Odds ratios (ORs) and 95% confidence intervals are provided for parameters in the models. ORs were deemed to be statistically significant if their probability values were less than 0.05.

5.4. Results

5.4.1. Sample Characteristics

Within the sample of 2,260 women, 376 (17%) were Pakistani, 438 (19%) were White, 394 (17%) were White Irish, 397 (18%) were Black Caribbean, 335 (15%) were Bangladeshi, and 320 (14%) were Indian (see Table 5.6). Most women were between the ages of 16 and 54 (81%). Pakistani and Bangladeshi women had the youngest age profile with at least 60% of women in both groups under 34. Around 20% of women met criteria for having a mental illness (score of 12 or above on the CIS-R). The levels of mental illness were highest for Pakistani women (26%) and lowest for Bangladeshi women (11%).

Table 5.6: Distribution of mental illness (CIS-R score) and control variables by ethnic group.
Values are number (percentage) (n=2260)

Variables	Total (N=2260)	Pakistani (n=376)	White (n=438)	White Irish (n=394)	Black Caribbean (n=397)	Bangladeshi (n=335)	Indian (n=320)
CIS-R Score							
0-11	1,818 (80.4)	280 (74.5)	361 (82.4)	317 (80.5)	318 (80.1)	297 (88.7)	245 (76.6)
12-44	442 (19.6)	96 (25.5)	77 (17.6)	77 (19.5)	79 (19.9)	38 (11.3)	75 (23.4)
Age in years							
16 to 34	900 (39.8)	223 (59.3)	115 (26.3)	105 (26.7)	130 (32.8)	206 (61.5)	121 (37.8)
35 to 54	921 (40.8)	118 (31.4)	194 (44.3)	191 (48.5)	178 (44.8)	94 (28.1)	146 (45.6)
55 to 74	439 (19.4)	35 (9.3)	129 (29.5)	98 (24.9)	89 (22.4)	35 (10.5)	53 (16.6)
English proficiency							
Proficient	1,848 (81.8)	244 (64.9)	438 (100)	394 (100)	397 (100)	106 (31.6)	269 (84.1)
Not proficient	412 (18.2)	132 (35.1)	0 (0)	0 (0)	0 (0)	229 (68.4)	51 (15.9)
Foreign born status							
Born in the UK	1,198 (53.0)	142 (37.8)	433 (98.9)	289 (73.4)	199 (50.1)	46 (13.7)	89 (27.8)
Foreign born	1,062 (47.0)	234 (62.2)	5 (1.1)	105 (26.7)	198 (49.9)	289 (86.3)	231 (72.2)
Marital status							
Married	1,412 (62.5)	267 (71.0)	277 (63.2)	250 (63.5)	143 (36.0)	236 (70.5)	239 (74.7)
Separated/ Divorced/ Widowed	322 (14.3)	29 (7.7)	70 (16.0)	73 (18.5)	80 (20.1)	43 (12.8)	27 (8.4)
Single	526 (23.3)	80 (21.3)	91 (20.8)	71 (18.0)	174 (43.8)	56 (16.7)	54 (16.9)
Household Equivalised Income							
Quintile 1 (Lowest)	780 (34.5)	186 (49.5)	70 (16.0)	76 (19.3)	129 (32.5)	227 (67.4)	92 (28.8)
2	368 (16.3)	54 (14.4)	83 (19.0)	79 (20.1)	86 (21.7)	12 (3.8)	54 (16.9)
3	303 (13.4)	25 (6.7)	87 (19.9)	70 (17.8)	70 (17.6)	3 (1.1)	48 (15.0)
4	226 (10.0)	6 (1.6)	85 (19.4)	75 (19.0)	34 (8.6)	5 (1.5)	21 (6.6)
Quintile 5 (Highest)	211 (9.3)	13 (3.5)	69 (15.8)	56 (14.2)	34 (8.6)	2 (0.8)	37 (11.6)
Missing	372 (16.5)	92 (24.5)	44 (10.1)	38 (9.6)	44 (11.1)	86 (25.5)	68 (21.3)
Employment Status							
Employed	1,040 (46.0)	83 (22.1)	268 (61.2)	248 (66.3)	224 (56.4)	28 (8.4)	189 (59.1)
Unemployed	80 (3.5)	13 (3.5)	6 (1.8)	7 (1.8)	24 (6.1)	17 (5.1)	13 (4.1)
Retired	222 (9.8)	13 (3.5)	78 (17.8)	58 (14.7)	48 (12.1)	4 (1.2)	21 (6.6)
Looking after home or family	699 (30.9)	210 (55.9)	58 (13.2)	61 (15.5)	55 (13.9)	242 (72.2)	73 (22.8)
Full time student	141 (6.2)	42 (11.2)	17 (3.9)	3 (0.8)	24 (6.1)	40 (11.9)	15 (4.7)
Other economically inactive	78 (3.5)	15 (4.0)	11 (6.4)	17 (4.3)	22 (5.5)	4 (1.2)	9 (2.8)

There was a substantial proportion of women that were not proficient in English in the Bangladeshi (68%), Pakistani (35%) and Indian (16%) ethnic groups, whilst all women in the White, White Irish and Black Caribbean groups were proficient in English. Large proportions of Bangladeshi (67%) and Pakistani (50%) women were living in households with the lowest income. Most women in the sample were either employed (46%) or looking after the home or family (31%). There were high levels of employment amongst White Irish, White, Indian and Black Caribbean women (between 59 and 61% of women). There were large proportions of women in the Bangladeshi (72%) and Pakistani groups (56%) that were looking after the home or family.

Table 5.7 shows the distribution of social network characteristics (unweighted) in women of each ethnic group. There was little difference between most ethnic groups in the amount of perceived positive support from the two closest people. White Irish women had a slightly higher score than other ethnic groups indicating more support (mean = 4.21, SE = 0.03). Bangladeshi and Pakistani women had the highest inadequate support scores of 2.9 (SE = 0.04) and 2.6 (SE = 0.04) respectively. Frequent contact with relatives was highest for Bangladeshi and White women (62% and 57% respectively), and lowest for Indian women (44%). Low proportions of Pakistani and Indian women reported that they did not have any relatives outside the household (12%). High proportions of Bangladeshi (65%) and White (64%) women saw friends frequently; the proportion was lowest for Indian women (46%). Large proportions of Pakistani and Indian women reported that they did not have any friends, and that they had small networks (0 to 2 people).

Table 5.7: Distribution of network characteristics by ethnic group.
Values are number (percentage) unless otherwise stated (n=2260)

Variables	Total (N=2260)	Pakistani (n=376)	White (n=438)	White Irish (n=394)	Black Caribbean (n=397)	Bangladeshi (n=335)	Indian (n=320)
Network support [Mean (SE)]							
Positive aspects of support	4.06 (0.01)	4.03 (0.04)	4.08 (0.03)	4.21 (0.03)	4.00 (0.04)	4.00 (0.04)	4.00 (0.04)
Inadequate Support	2.42 (0.02)	2.59 (0.04)	2.18 (0.03)	2.28 (0.03)	2.29 (0.04)	2.86 (0.04)	2.45 (0.05)
Contact with relatives							
Frequent face to face contact	868 (38.4)	199 (52.9)	248 (56.6)	202 (51.3)	196 (49.4)	207 (61.8)	141 (44.1)
No frequent face to face contact	1,193 (52.8)	130 (34.6)	157 (35.9)	174 (44.2)	171 (43.1)	96 (28.7)	140 (43.8)
No extra-household relatives	199 (8.8)	47 (12.5)	33 (7.5)	18 (4.6)	30 (7.6)	32 (9.6)	39 (12.2)
Contact with friends							
Frequent face to face contact	727 (32.2)	177 (47.1)	281 (64.2)	224 (56.9)	232 (58.4)	217 (64.8)	146 (45.6)
No frequent face to face contact	1,277 (56.5)	119 (31.7)	135 (30.8)	142 (36.0)	143 (36.0)	71 (21.2)	117 (36.6)
No friends	256 (11.3)	80 (21.3)	22 (5.0)	28 (7.1)	22 (5.5)	47 (14.0)	57 (17.8)
Network content							
Spouse & relative	980 (43.4)	154 (41.0)	213 (48.6)	193 (49.0)	107 (27.0)	168 (50.2)	145 (45.3)
Spouse & friend	139 (6.2)	10 (2.7)	31 (7.1)	38 (9.6)	24 (6.1)	22 (6.6)	14 (4.4)
Friend & relative	314 (13.9)	31 (8.2)	60 (13.7)	56 (14.2)	90 (22.7)	36 (10.8)	41 (12.8)
Relatives	546 (24.2)	122 (32.5)	73 (16.7)	77 (19.5)	133 (33.5)	74 (22.1)	67 (20.9)
Friends	66 (2.9)	5 (1.3)	17 (3.9)	14 (3.6)	19 (4.8)	6 (1.8)	5 (1.6)
0 or 1 close person	215 (9.5)	54 (14.4)	44 (10.1)	16 (4.1)	24 (6.1)	29 (8.7)	48 (15.0)
Network size							
0-2 people	494 (21.9)	119 (31.7)	85 (19.4)	55 (14.0)	75 (18.9)	65 (19.4)	95 (29.7)
3-7 people	1,171 (51.8)	193 (51.3)	255 (58.2)	228 (57.9)	231 (58.2)	108 (32.2)	156 (48.8)
8 or more people	595 (26.3)	64 (17.0)	98 (22.4)	111 (28.2)	91 (22.9)	162 (48.4)	69 (21.6)

5.4.2. Differences in mental health service use by ethnic group, social network composition and demographic variables

Use of any mental health service. Table 5.8 shows the percentage of women in each category that used any mental health service i.e. women that saw a doctor for mental health problems, or used secondary care services, or used both services. Within the sample, mental health service use was lowest for Bangladeshi (5%, see Table 5.8) and Pakistani women (7%). The percentage for White Irish women (13%) was almost twice that of Pakistani women. White and Indian women had a rate that was about one and a half times that of Pakistani women. Large proportions of women who met clinical criteria for mental illness (CIS-R score >=12) had used mental health services, compared with those without mental illness (31% vs 6%). Service use was higher for women who were proficient in English than those who were not proficient, and for women born in the UK (11%), compared with women who were foreign born (6.5%). Mental health service use was highest in the 35 to 54 year age group.

There was not much difference in service use between women of different marital statuses, with a slightly higher rate for women who were single. There was not a linear relationship between equivalised household income and mental health service use. Women in the middle quintile had the highest percentage of mental health service use (16%) and women in the highest quintiles the lowest (4%). There was a large proportion of women who were economically inactive that had used mental health services (24%). Very few women (n=33, 1%) had visited a doctor and seen a counsellor, psychologist or CPN. Out of the women that had seen a doctor for their problems, 18% had also used secondary care services, and of those women that had used secondary care services, 43% had also seen a doctor.

Table 5.8: Mental health service usage (outcome variables) by each explanatory variable (weighted). [Unweighted base=2,260]

	Mental Health Service Use in the past 6 months		
Explanatory Variables	**Used any mental health service % (SE)**	**Saw doctor for emotional/ stress-related problem % (SE)**	**Used secondary care services % (SE)**
Ethnic group			
Pakistani	7.1 (0.01)	5.3 (0.01)	2.6 (0.01)
White	10.6 (0.02)	9.2 (0.02)	4.0 (0.01)
White Irish	13.4 (0.02)	11.6 (0.02)	4.9 (0.01)
Black Caribbean	10.7 (0.02)	7.3 (0.01)	5.1 (0.01)
Bangladeshi	5.4 (0.01)	3.5 (0.01)	2.6 (0.01)
Indian	10.2 (0.02)	8.2 (0.02)	2.6 (0.01)
CIS-R Score			
0-11	6.1 (0.01)	5.5 (0.01)	2.4 (0.01)
12-44	31.3 (0.05)	25.6 (0.05)	11.1 (0.04)
Age in years			
16 to 34	10.1 (0.03)	9.0 (0.03)	4.8 (0.02)
35 to 54	13.4 (0.03)	11.1 (0.02)	5.5 (0.02)
55 to 74	7.0 (0.02)	6.3 (0.02)	0.7 (0.01)
English proficiency			
Proficient	10.7 (0.01)	9.2 (0.01)	4.0 (0.01)
Not proficient	4.3 (0.01)	2.0 (0.01)	2.3 (0.01)
Foreign born status			
Born in the UK	10.9 (0.02)	9.3 (0.01)	4.1 (0.01)
Foreign born	6.5 (0.01)	5.3 (0.01)	1.6 (0.01)
Marital status			
Married	10.1 (0.02)	9.4 (0.02)	3.3 (0.01)
Separated/ Divorced/ Widowed	10.4 (0.04)	8.6 (0.04)	2.0 (0.02)
Single	12.5 (0.04)	9.0 (0.03)	7.4 (0.03)
Household Equivalised Income			
Quintile 1 (Lowest)	13.8 (0.04)	10.9 (0.04)	6.1 (0.03)
2	7.6 (0.03)	7.6 (0.03)	0.2 (0.01)
3	15.6 (0.04)	14.3 (0.04)	5.2 (0.02)
4	8.6 (0.03)	7.5 (0.03)	2.4 (0.01)
Quintile 5 (Highest)	3.7 (0.02)	3.5 (0.02)	3.4 (0.02)
Missing	15.0 (0.06)	10.6 (0.05)	8.2 (0.05)
Employment Status			
Employed	10.0 (0.02)	9.2 (0.02)	2.7 (0.01)
Unemployed	4.5 (0.02)	3.0 (0.02)	1.6 (0.01)
Retired	6.0 (0.02)	4.9 (0.02)	1.1 (0.01)
Looking after home/ family	13.9 (0.05)	8.5 (0.04)	10.0 (0.05)
Other Economically inactive	23.5 (0.09)	23.3 (0.09)	9.8 (0.06)
Perceived Support [Mean (SE)]			
Positive aspects of support	3.95 (0.18)	4.07 (0.13)	3.60 (0.41)
Inadequate support	2.59 (0.17)	2.49 (0.15)	2.95 (0.35)
Contact with relatives			
Frequent face to face contact	8.2 (0.02)	7.3 (0.02)	2.6 (0.01)
No frequent face to face contact	15.6 (0.03)	12.9 (0.03)	6.7 (0.02)
No relatives outside the house	4.6 (0.03)	4.4 (0.03)	0.3 (0.01)
Contact with friends			
Frequent face to face contact	10.6 (0.02)	9.3 (0.02)	4.6 (0.01)
No frequent face to face contact	11.5 (0.03)	9.5 (0.03)	2.2 (0.01)
No friends	7.3 (0.05)	6.8 (0.05)	6.2 (0.05)
Network content			
Spouse & relative	10.2 (0.02)	9.2 (0.02)	2.9 (0.01)
Spouse & friend	10.8 (0.06)	10.7 (0.06)	0.2 (0.01)
Friend & relative	9.4 (0.04)	9.2 (0.04)	3.6 (0.03)
Relatives	14.1 (0.04)	11.5 (0.04)	5.3 (0.03)
Friends	10.4 (0.08)	9.6 (0.07)	9.3 (0.07)
0 or 1 close person	8.9 (0.06)	3.5 (0.03)	8.6 (0.06)
Number of close people			
0-2 people	9.1 (0.03)	6.1 (0.02)	4.6 (0.03)
3-7 people	13.4 (0.02)	12.3 (0.02)	3.9 (0.01)
8 or more people	5.2 (0.02)	3.9 (0.02	3.7 (0.02)

There was variation in mental health service use by network contact. Mental health service use was more common for women who did not have frequent face to face contact with their relatives (16%), compared with women who saw their relatives at least once a week (8%). There was little difference in service use between women who had frequent face to face contact with their friends, compared with those who did not. Women with medium sized networks (between 3 and 7 people) had used mental health services more, compared with those with small or large networks. Network content also had an effect; women whose two closest people consisted of relatives had the highest level of service use (14%) compared with women who had only one close person or no close people who had the lowest (9%). The mean positive aspects of support score for women who had used mental health services was 3.95, which was slightly lower than the mean score for women who had not used services (4.08, not reported in table). The mean inadequate support score was 2.59, which was slightly higher than for women who had not seen a GP (2.15, not reported in table).

Visits to doctor for a mental health problem. The patterns of visiting a doctor for a mental health problem were very similar to those for using any mental health service. Bangladeshi and Pakistani women had the lowest rates of use and White Irish women had the highest rates.

Use of secondary care services. The patterns of use for secondary care services were broadly similar to those for using any mental health service but there were some differences. As for use of any mental health service, there was an increased rate of usage of counsellors, psychologists and CPNs for women who had higher CIS-R scores, were proficient in English, who were born in the UK, were aged 35 to 54 years, were economically inactive, or did not see their relatives frequently. However, the ethnic patterning was slightly different with Pakistani women, along with Bangladeshi and Indian women displaying the lowest rates (2.6%) of using secondary care services. Black

Caribbean (5.1%) and White Irish (4.9%) women had the highest rates. White women had a usage rate of 4%. Further, in contrast to the patterns for using any mental health service, women in the lowest quintile had the highest rates of using secondary care mental health services, as did women with no friends.

5.4.3. How does Pakistani women's mental health service use compare with women of other ethnic groups?

Table 5.9 shows the results of the stepwise logistic regression modelling to investigate the relationship between ethnic group and mental health service use. In the model adjusted for age (M1), White Irish women (OR = 2.01, CI = 1.13 – 3.58, p=0.018) were more likely to have used mental health services, compared with Pakistani women. There was no difference in the usage of mental health services between Pakistani women and women in the other ethnic groups (White, Black Caribbean, Bangladeshi and Indian). The BIC for this model was 32,890. When CIS-R score was added in M2, White women (OR = 1.99, CI = 1.07 – 3.68, p=0.029), Black Caribbean women (OR = 1.91, CI = 1.03 – 3.45, p=0.030) and White Irish women (OR = 2.57, CI = 1.38 – 4.80, p=0.003) were more likely to have used mental health services, compared with Pakistani women. Women who scored 12 or more on the CIS-R were more than 6 times as likely to have used mental health services, compared with women who had low scores (OR = 6.7, CI = 3.44 – 13.0, p<0.001). The BIC for this model was 29,343, a reduction of 3,546 from Model 1, suggesting that Model 2 was a better fit to the data than Model 1.

Table 5.9: Results of logistic regression modelling investigating the association between ethnic group and usage of mental health services. Values are odds ratios (95% confidence intervals). Unweighted n =2,260

	M1: Adjusted for age		M2:Adjusted for age & mental illness		M3:Adjusted for age, mental illness & control variables	
	OR (95% CI)	**P value**	**OR (95% CI)**	**P value**	**OR (95% CI)**	**P value**
Ethnic group						
Pakistani (ref.) [a]	1.00	-	1.00	-	1.00	-
White	1.59 (0.89 – 2.83)	0.115	1.99 (1.07 – 3.68)	0.029	3.43 (1.38 – 8.52)	0.008
White Irish	2.01 (1.13 – 3.58)	0.018	2.57 (1.38 – 4.80)	0.003	4.70 (1.86 – 11.9)	0.001
Black Caribbean	1.58 (0.91 – 2.74)	0.104	1.91 (1.06 – 3.45)	0.030	2.88 (1.19 – 7.00)	0.020
Bangladeshi	0.76 (0.38 – 1.54)	0.445	1.10 (0.51 – 2.37)	0.809	1.07 (0.47 – 2.44)	0.877
Indian	1.47 (0.81 – 2.65)	0.202	1.62 (0.86 – 3.07)	0.136	2.22 (1.01 – 4.91)	0.048
Age in years						
16 to 34 (ref.)	1.00	-	1.00	-	1.00	-
35 to 54	1.36 (0.65 – 2.88)	0.416	1.19 (0.54 – 2.62)	0.661	1.14 (0.46 – 2.83)	0.783
55 to 74	0.67 (0.27 – 1.62)	0.372	0.80 (0.32 – 2.03)	0.642	0.88 (0.20 – 3.89)	0.867
CIS-R Score						
0-11 (ref.)			1.00	-	1.00	-
12-44			6.70 (3.44 – 13.0)	<0.001	6.69 (3.42 – 13.1)	<0.001
Marital status						
Married (ref.)					1.00	-
Separated/ Divorced/ Widowed					0.82 (0.34 – 1.94)	0.646
Single					0.90 (0.33 – 2.46)	0.844
Household Equivalised Income						
Quintile 1 (Lowest) (ref.)					1.00	-
2					0.47 (0.16 – 1.36)	0.165
3					1.14 (0.41 – 3.19)	0.798
4					0.68 (0.25 – 1.86)	0.451
Quintile 5 (Highest)					0.30 (0.07 – 1.28)	0.105
Missing					1.31 (0.43 – 4.02)	0.637
Employment Status						
Employed (ref.)					1.00	-
Unemployed					0.65 (0.21 – 1.96)	0.443
Retired					0.43 (0.17 – 4.14)	0.831
Looking after home or family					1.41 (0.58 – 3.45)	0.446
Full time student					2.94 (0.64 – 13.6)	0.168
Other Economically inactive					4.40 (1.27 – 15.3)	0.019

[a]Reference category

When control variables (marital status, household equivalised income, and employment status) were added in M3, White, White Irish and Black Caribbean women remained more likely to have used mental health services than Pakistani women (although the effect of ethnic group was stronger in this model, denoted by an increase in odds ratios for all ethnic groups). Indian women were also more likely to have used mental health services than Pakistani women (OR = 2.22, CI = 1.01 – 4.91, p=0.048). Hence, once the model was adjusted for levels of mental illness, and demographic and economic differences, Pakistani women were less likely to use mental health services than women in all other ethnic groups except those in the Bangladeshi group (who had the same rate as women in the Pakistani group). In addition, there was an association between being in the other economically inactive group, compared with being employed, with women in the former group more likely to have used mental health services (OR = 4.40, CI = 1.27 – 15.3, p=0.019). Most of the women in this group (88%) were not working due to sickness or disability. The BIC for Model 3 was 28,013. This was lower than the BIC for Model 2 (by 1,333) suggesting Model 3 was a better fit to the data than Model 2.

5.4.4. Are social networks associated with mental health service use?

Models 4a to 4d were fitted to the data to assess the association between social networks and mental health service use, for each aspect separately: network support, network contact, network content, and network size. M3 was nested in each of these models (see Appendix 5.5). From M4a, it was evident that there was no association between positive aspects of support and use of mental health services (OR = 0.99, CI = 0.66 – 1.48, p=0.948). However, women who perceived that their network was lacking in support had an increased chance of using mental health services (OR = 1.79, CI = 1.10 – 2.92, p=0.020). Model 4b showed that women who had frequent face to face contact with relatives were less likely to have used mental health services (OR = 0.42, CI = 0.22 – 0.82, p=0.011) but there was no effect of frequent face to face contact with friends on mental

health service use (OR = 0.95, CI = 0.48 – 1.90, p=0.888). The content of women's networks (Model 4c) did not have any association with usage of mental health services, and nor did the size of women's networks (Model 4d).

When all of the social network variables were added together in one model (M5, see Table 5.10), the association between inadequate network support and usage of mental health services remained, with women with higher levels of inadequate support more likely to have used mental health services (OR = 1.92, CI = 1.13 – 3.26, p=0.016). The association between frequent contact with relatives and use of mental health services also remained, with women who had frequent contact with their relatives less likely to use mental health services (OR = 0.45, CI = 0.23 – 0.90, p=0.023). In this model, after additionally adjusting for variables reflecting the size, content, contact and support within networks, women of all other ethnic groups (except for Bangladeshi women) remained more likely than Pakistani women to have used mental health services. The BIC for Model 5 was 25,603, a reduction of 2,414 compared with Model 3. This suggests that Model 5 was a better fit to the data than Model 3.

Table 5.10: Results of logistic regression model for association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =2,260

	M5: Adjusted for age, mental illness, control variables & social network variables	
	OR (95% CI)	**P value**
Ethnic group		
Pakistani (ref.)[a]	1.00	-
White	4.22 (1.49 – 12.0)	0.007
White Irish	5.29 (1.86 – 11.9)	0.001
Black Caribbean	3.28 (1.24 – 8.65)	0.017
Bangladeshi	1.14 (0.43 – 3.00)	0.789
Indian	2.65 (1.05 – 6.74)	0.040
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.89 (0.34 – 2.33)	0.819
55 to 74	0.58 (0.12 – 2.84)	0.501
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	5.91 (2.80 – 12.5)	<0.001
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.92 (0.26 – 3.25)	0.646
Single	0.71 (0.17 – 2.96)	0.844
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.61 (0.19 – 1.94)	0.407
3	1.54 (0.54 – 4.43)	0.420
4	0.79 (0.26 – 2.37)	0.674
Quintile 5 (Highest)	0.30 (0.06 – 1.41)	0.127
Missing	1.40 (0.36 – 5.40)	0.627
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.56 (0.18 – 1.81)	0.335
Retired	1.02 (0.20 – 5.35)	0.980
Looking after home or family	1.51 (0.62 – 3.71)	0.366
Full time student	3.15 (0.63 – 15.7)	0.161
Other Economically inactive	6.11 (1.57 – 23.7)	0.009
Network Support		
Positive aspects of support	0.93 (0.60 – 1.44)	0.755
Inadequate support	1.92 (1.13 – 3.26)	0.016
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.45 (0.23 – 0.90)	0.023
No extra-household relatives	0.19 (0.03 – 1.33)	0.095
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.85 (0.41 – 1.79)	0.673
No friends	0.26 (0.03 – 2.02)	0.200
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.44 (0.14 – 1.33)	0.144
Friend & Relative	0.79 (0.18 – 3.37)	0.745
Relatives	1.65 (0.40 – 6.86)	0.490
Friends	1.42 (0.13 – 16.0)	0.778
0 or 1 close person	0.70 (0.15 – 3.21)	0.644
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	1.82 (0.59 – 5.54)	0.295
8 or more	0.84 (0.23 – 3.05)	0.785

[a]Reference category

English proficiency and foreign born status were thought to be important factors influencing service use. However, during the modelling process, it became evident that there was collinearity between these variables and ethnic group. There were not any women in the White, White Irish or Black Caribbean groups that did not speak English, and there were very few White women that were not born in the UK (1%). In addition, there was high collinearity between English proficiency and foreign born status (tetrachoric correlation coefficient = 0.81, $p<0.001$), suggesting that these two variables should not be used together in the same model. Hence, these two variables were not added to the models presented here. Instead, models stratified by ethnic group were used to ascertain the association between English proficiency and mental health service use. Models were fitted to the data for Pakistani, Bangladeshi, and Indian women (the three ethnic groups that contained women who did not speak English). These models contained the same variables as Model 5 (in Table 5.10) with the exception of ethnic group and the addition of English proficiency (binary variable, 0: proficient in English 1: not proficient in English). In each of these models, there was no statistical difference in mental health service use between women who spoke English and those who did not. For women who did not speak English, the odds ratios were: Pakistani OR = 0.48, CI = 0.14 – 1.66, p=0.244; Bangladeshi OR = 0.56, C I= 0.14 – 2.29, p=0.419; Indian OR = 0.32, CI = 0.07 – 1.55, p=0.158 (models not shown).

The same modelling strategy was followed to ascertain the association between being born outside of the UK (binary variable, 0: born in the UK, 1: born outside the UK) and mental health service use. Five models were fitted for each ethnic minority group; a model was not fitted for White women due to the small percentage (1%) of women born outside the UK. Foreign born status did not influence mental health service use for White Irish (OR = 0.61, CI = 0.17 – 2.13, p=0.438), Black Caribbean (OR = 0.70, CI = 0.27 – 1.78, p=0.450), Indian (OR = 2.20, C I= 0.57 – 8.50, p=0.251), or Bangladeshi (OR = 0.31,

CI = 0.02 – 5.21, p=0.416) women (models not shown). There was evidence to suggest that Pakistani foreign born women were less likely to have used mental health services, compared with Pakistani women who were born in the UK (OR = 0.27, CI = 0.08 – 0.94, p=0.040, model shown in Appendix 5.6).

5.4.5. Ethnic differences in the association between social networks and mental health service use

Analyses stratified by ethnic group. In order to answer the third research question (Is the association between social networks and mental health service use the same for Pakistani women the same as for women of other ethnic groups?), Model 5 from the previous section was stratified by ethnic group to estimate six models for women of each ethnic group. These models are shown in Tables 5.11 to 5.16. As the numbers of women in some of the categories of the independent variables were small, some women were omitted from models by Stata software, if a category perfectly predicted not using mental health services. For example, there were only six Pakistani women in the fourth income quintile and none of these had used services. In order to retain women such as this in the sample and use their data in models, categories of independent variables were amalgamated (Allison, 2008). This was done in different ways depending on the distribution of variables for each ethnic group. For Pakistani women, quintiles 4 and 5 of household income were merged, as were retired and economically inactive employment statuses, and friends and 'friends and relatives' in network content. For Bangladeshi women, quintiles 2 to 5 were merged, as there were only 22 women in these four quintiles out of 335 in the sample. In addition, retired women, economically inactive women and full time students were merged into one category, as were friends and 'friends and relatives' in network content. For White Irish and Indian women, full time students and retired women were merged. There was not any need to merge any independent variable categories for White or Black Caribbean women.

In the model for Pakistani women (Model 5a, Table 5.11), inadequate support and frequent contact with relatives did not have statistically significant associations with mental health service use, contrary to the findings from Model 5 (the average effect for women of all ethnic groups), although the directions of the associations were the same. Higher levels of inadequate support were associated with increased mental health service use only for White (Model 5b, Table 5.12: OR = 1.91, CI = 1.06 – 3.43, p=0.031), and White Irish (Model 5c, Table 5.13: OR = 3.11, CI = 1.72 – 5.65, p<0.001) women. Frequent contact with relatives was associated with decreased odds of using mental health services for only Bangladeshi women (Model 5e, Table 5.15: OR = 0.24, CI = 0.06 – 0.99, p=0.048), although there was an indication that this relationship held for White women as well (OR = 0.24, CI = 0.23 – 1.02, p=0.057) but it was not statistically significant in the latter model. In addition, there was an association between size of network and use of mental health services for Pakistani women only, with women with between 3 and 7 close people (OR = 6.18, CI = 1.18 – 32.4, p=0.031), and women with 8 or more people (OR = 15.7, CI = 2.26 – 108.5, p=0.005) in their networks more likely to have used mental health services. Pakistani women who had two close people consisting of a spouse and a friend (OR = 6.36, CI = 1.07 – 37.9, p=0.042) were more likely to have used mental health services than Pakistani women who had a spouse and a relative as their two closest people.

Table 5.11: Logistic Regression Model (5a) for Pakistani women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =376

	OR (95% CI)	P value
Network Support		
Positive aspects of support	0.89 (0.47 – 1.65)	0.703
Inadequate support	1.43 (0.81 – 2.55)	0.219
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.83 (0.33 – 2.12)	0.699
No extra-household relatives	2.60 (0.60 – 11.3)	0.202
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	1.38 (0.43 – 4.42)	0.586
No friends	1.23 (0.38 – 4.01)	0.734
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	6.36 (1.07 – 37.9)	0.042
Friend & Relative, or Friends	0.81 (0.09 – 7.26)	0.850
Relatives	1.65 (0.46 – 5.89)	0.442
0 or 1 close person	7.09 (0.90 – 55.9)	0.063
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	6.18 (1.18 – 32.4)	0.031
8 or more	15.7 (2.26 – 108.5)	0.005
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.73 (0.28 – 1.93)	0.525
55 to 74	0.22 (0.02 – 2.49)	0.220
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	7.13 (2.78 – 18.3)	<0.001
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.35 (0.05 – 2.32)	0.276
Single	0.60 (0.11 – 3.10)	0.538
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.40 (0.09 – 1.74)	0.222
3	0.95 (0.16 – 5.55)	0.951
4 or 5	1.33 (0.08 – 21.8)	0.842
Missing	0.38 (0.12 – 1.20)	0.099
Employment Status		
Employed (ref.)	1.00	-
Unemployed	2.56 (0.41 – 15.9)	0.315
Looking after home or family	1.10 (0.27 – 4.58)	0.891
Full time student	0.16 (0.01 – 1.77)	0.135
Other Economically inactive or Retired	0.78 (0.07 – 8.73)	0.840

Table 5.12: Logistic Regression Model (5b) for White women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =438

	OR (95% CI)	P value
Network Support		
Positive aspects of support	0.88 (0.55 – 1.41)	0.584
Inadequate support	1.91 (1.06 – 3.43)	0.031
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.48 (0.23 – 1.02)	0.057
No extra-household relatives	0.25 (0.04 – 1.65)	0.151
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.80 (0.35 – 1.83)	0.605
No friends	0.30 (0.03 – 2.98)	0.304
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.39 (0.11 – 1.32)	0.129
Friend & Relative	0.64 (0.13 – 3.12)	0.583
Relatives	1.57 (0.32 – 7.69)	0.577
Friends	1.06 (0.11 – 9.94)	0.958
0 or 1 close person	0.81 (0.15 – 4.26)	0.802
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	2.28 (0.67 – 7.75)	0.188
8 or more	0.80 (0.18 – 3.51)	0.770
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.90 (0.32 – 2.55)	0.845
55 to 74	0.60 (0.11 – 3.37)	0.558
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	6.74 (3.04 – 14.9)	<0.001
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.92 (0.23 – 3.65)	0.911
Single	0.86 (0.19 – 3.94)	0.843
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.63 (0.18 – 2.23)	0.476
3	1.59 (0.52 – 4.81)	0.415
4	0.72 (0.22 – 2.41)	0.598
5	0.26 (0.04 – 1.69)	0.158
Missing	1.88 (0.46 – 7.76)	0.383
Employment Status		
Employed (ref.)	1.00	-
Unemployed	1.32 (0.24 – 7.21)	0.748
Retired	0.95 (0.16 – 5.72)	0.951
Looking after home or family	6.13 (1.44 – 26.1)	0.014
Full time student	1.70 (0.66 – 4.38)	0.270
Other Economically inactive	3.14 (0.62 – 15.8)	0.167

Table 5.13: Logistic Regression Model (5c) for White Irish women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =394

	OR (95% CI)	P value
Network Support		
Positive aspects of support	1.46 (0.85 – 2.48)	0.167
Inadequate support	3.11 (1.72 – 5.65)	<0.001
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.57 (0.26 – 1.25)	0.159
No extra-household relatives	1.16 (0.09 – 14.6)	0.907
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	1.76 (0.67 – 4.64)	0.251
No friends	0.64 (0.12 – 3.48)	0.606
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	1.45 (0.42 – 5.06)	0.558
Friend & Relative	4.82 (1.48 – 15.6)	0.009
Relatives	4.88 (1.27 – 18.7)	0.021
Friends	13.8 (2.59 – 73.1)	0.002
0 or 1 close person	0.45 (0.06 – 3.41)	0.437
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	0.70 (0.16 – 3.00)	0.627
8 or more	1.15 (0.28 – 4.79)	0.845
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.92 (0.32 – 2.67)	0.885
55 to 74	0.22 (0.04 – 1.21)	0.081
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	3.54 (1.49 – 8.42)	0.004
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.69 (0.22 – 2.19)	0.532
Single	0.41 (0.13 – 1.30)	0.128
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	1.17 (0.39 – 3.51)	0.776
3	0.63 (0.15 – 2.68)	0.528
4	1.17 (0.31 – 4.50)	0.816
5	0.78 (0.19 – 3.21)	0.726
Missing	0.27 (0.02 – 3.06)	0.291
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.41 (0.04 – 4.35)	0.456
Retired	5.76 (1.05 – 31.6)	0.044
Looking after home or family	0.42 (0.10 – 1.72)	0.227
Other Economically inactive or Full Time Student	1.93 (0.43 – 8.56)	0.388

Table 5.14: Logistic Regression Model for Black Caribbean (5d) women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =397

	OR (95% CI)	P value
Network Support		
Positive aspects of support	1.02 (0.62 – 1.69)	0.938
Inadequate support	1.10 (0.71 – 1.72)	0.663
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.48 (0.20 – 1.13)	0.092
No extra-household relatives	2.08 (0.73 – 5.98)	0.173
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	1.24 (0.50 – 3.11)	0.643
No friends	3.17 (0.92 – 11.0)	0.068
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.83 (0.15 – 4.53)	0.834
Friend & Relative	0.61 (0.17 – 2.19)	0.445
Relatives	0.29 (0.08 – 0.99)	0.048
Friends	1.16 (0.25 – 5.34)	0.853
0 or 1 close person	0.40 (0.07 – 2.29)	0.301
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	1.48 (0.46 – 4.72)	0.512
8 or more	0.93 (0.22 – 3.97)	0.918
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	1.62 (0.54 – 4.85)	0.392
55 to 74	0.58 (0.09 – 3.61)	0.564
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	8.13 (3.78 – 17.5)	<0.001
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.87 (0.19 – 3.98)	0.858
Single	1.53 (0.53 – 4.40)	0.427
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.57 (0.19 – 1.66)	0.299
3	0.70 (0.22 – 2.28)	0.554
4	2.59 (0.76 – 8.85)	0.129
5	0.48 (0.11 – 2.20)	0.346
Missing	1.36 (0.34 – 5.40)	0.661
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.66 (0.19 – 2.32)	0.519
Retired	1.31 (0.20 – 8.35)	0.779
Looking after home or family	1.50 (0.37 – 6.02)	0.568
Full time student	0.68 (0.28 – 1.63)	0.383
Other Economically inactive	1.63 (0.37 – 7.16)	0.517

Table 5.15: Logistic Regression Model (5e) for Bangladeshi women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =335

	OR (95% CI)	P value
Network Support		
Positive aspects of support	0.79 (0.36 – 1.76)	0.569
Inadequate support	0.73 (0.33 – 1.62)	0.444
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.24 (0.06 – 0.99)	0.048
No extra-household relatives	0.69 (0.15 – 3.22)	0.637
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.46 (0.08 – 2.87)	0.409
No friends	1.44 (0.25 – 8.23)	0.683
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	2.55 (0.48 – 13.6)	0.274
Friend & Relative, or Friends[+]	0.94 (0.11 – 7.83)	0.955
Relatives	2.48 (0.36 – 17.1)	0.355
0 or 1 close person	0.35 (0.02 – 5.53)	0.454
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	0.74 (0.13 – 4.22)	0.730
8 or more	0.53 (0.10 – 2.81)	0.459
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	1.23 (0.13 – 11.4)	0.853
55 to 74	12.5 (1.22 – 126.9)	0.033
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	1.77 (0.37 – 8.50)	0.478
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.09 (0.01 – 2.20)	0.140
Single	4.53 (0.34 – 60.4)	0.253
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2, 3, 4 or 5[#]	3.59 (0.23 – 56.6)	0.364
Missing	0.40 (0.14 – 1.18)	0.097
Employment Status		
Employed (ref.)	1.00	-
Unemployed	3.07 (0.39 – 24.4)	0.290
Looking after home or family	0.96 (0.18 – 5.27)	0.966
Other Economically inactive, Retired or Full Time Student *	0.21 (0.02 – 2.42)	0.210

Table 5.16: Logistic Regression Model (5f) for Indian women for the association between social networks and use of mental health services.
Values are odds ratios (95% confidence intervals). Unweighted n =320

	OR (95% CI)	P value
Network Support		
Positive aspects of support	0.77 (0.40 – 1.48)	0.431
Inadequate support	1.03 (0.56 – 1.89)	0.928
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.89 (0.33 – 2.39)	0.812
No extra-household relatives	0.05 (0.01 – 0.40)	0.004
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.78 (0.30 – 2.02)	0.612
No friends	0.77 (0.19 – 3.05)	0.705
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	1.64 (0.16 – 16.7)	0.675
Friend & Relative	6.21 (1.48 – 26.0)	0.012
Relatives	2.43 (0.79 – 7.43)	0.120
Friends	2.69 (0.20 – 35.3)	0.452
0 or 1 close person	3.01 (0.37 – 24.2)	0.300
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	0.93 (0.31 – 2.74)	0.890
8 or more	2.28 (0.55 – 9.46)	0.255
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.89 (0.30 – 2.62)	0.829
55 to 74	0.37 (0.08 – 1.68)	0.198
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	3.28 (1.47 – 7.30)	0.004
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	1.98 (0.51 – 7.61)	0.320
Single	0.60 (0.10 – 3.50)	0.568
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	1.49 (0.41 – 5.45)	0.547
3	0.75 (0.14 – 4.12)	0.744
4	0.11 (0.01 – 1.26)	0.077
5	0.65 (0.11 – 3.74)	0.628
Missing	0.72 (0.18 – 2.90)	0.648
Employment Status		
Employed (ref.)	1.00	-
Unemployed	4.13 (0.63 – 27.1)	0.140
Retired	0.85 (0.10 – 7.37)	0.880
Looking after home or family	1.21 (0.41 – 3.64)	0.728
Other Economically inactive or Full Time Student	0.32 (0.04 – 2.70)	0.292

Analyses utilising interaction terms. The final step of the analysis, shown in Table 5.17, formally tested whether there were differences in associations between network variables and mental health service use across ethnic groups. The focus was on the two variables that were found to be associated with mental health service use in previous models. Frequent contact with relatives was found to be associated with reduced use of mental health services. In order to test if this association was different between ethnic groups, interaction terms between ethnic group and contact with relatives were added to Model 5 (M5), resulting in Model 6a (M6a). For this model, the three categories of contact with relatives was reduced to two (coding = 0: no contact with relatives or no relatives outside the household, 1: frequent contact with relatives) because the category 'no relatives outside the household' was small (8.8% of women) making the use of interaction terms with this category problematic. Inadequate support was also found to be associated with increased mental health service use. Interaction terms of ethnic group and inadequate support were added to M5, resulting in Model 6b (M6b), to assess the difference in the association between inadequate support and mental health service use between ethnic groups.

The results of M6a and M6b are shown in Table 5.17. In M6a, none of the interaction terms between ethnic group and contact with relatives were statistically significant, suggesting that contact with relatives had the same association with mental health service use for all ethnic groups. Further, the BIC for this model was 26,055, an increase of 452 from Model 5. This suggests that the model with the interaction term was a worse fit to the data than the model without interaction terms. When the interaction of ethnic group and inadequate support was added in M6b, the model became unstable with very large odds ratios and confidence intervals for Bangladeshi and Indian women. The interaction terms in this model were not statistically significant suggesting that the association between inadequate support and mental health service use was the same across

ethnic groups. The model also had a higher BIC (25,629, increase of 26) than Model 5, suggesting that the model with interaction terms was a worse fit than Model 5.

Table 5.17: Results of logistic regression of usage of mental health services with interaction terms added.
Values are odds ratios (95% confidence intervals). Unweighted n=2,260.

	M6a: Interaction of ethnic group & contact with relatives*		**M6b: Interaction of ethnic group & inadequate support***	
	OR (95% CI)	**P value**	**OR (95% CI)**	**P value**
Ethnic group				
Pakistani (ref.)[a]	1.00	-	1.00	-
White	4.54 (1.46 – 14.2)	0.009	7.77 (0.61 – 98.8)	0.114
White Irish	6.79 (2.18 – 21.2)	0.001	7.68 (0.44 – 133.3)	0.161
Black Caribbean	4.42 (1.53 – 12.7)	0.006	11.7 (0.97 – 141.1)	0.053
Bangladeshi	1.84 (0.54 – 6.31)	0.329	72.3 (0.91 – 5781.5)	0.055
Indian	2.59 (0.90 – 7.45)	0.078	21.0 (0.99 – 448.4)	0.051
*Ethnic Group*Contact with Relatives*				
Pakistani*Frequent Contact (ref.)	1.00	-		
White*Frequent Contact	0.88 (0.24 – 3.20)	0.842		
White Irish*Frequent Contact	0.60 (0.15 – 2.41)	0.471		
Black Caribbean*Frequent Contact	0.52 (0.13 – 2.08)	0.357		
Bangladeshi*Frequent Contact	0.32 (0.05 – 1.98)	0.221		
Indian*Frequent Contact	1.11 (0.23 – 5.39)	0.899		
*Ethnic Group*Inadequate Support*				
Pakistani*Inadequate Support (ref.)			1.00	-
White*Inadequate Support			0.81 (0.33 – 1.98)	0.645
White Irish*Inadequate Support			0.89 (0.32 – 2.47)	0.828
Black Caribbean*Inadequate Support			0.63 (0.27 – 1.48)	0.290
Bangladeshi*Inadequate Support			0.23 (0.04 – 1.16)	0.074
Indian*Inadequate Support			0.46 (0.15 – 1.40)	0.170

*Adjusted for age, CIS-R score, marital status, household equivalised income, employment status, network support, network contact, network content, and network size.
[a] Reference category

5.4.6. Additional Analyses

Relationship between social networks, mental illness and service use. From Model 5 presented above (Table 5.10), it was found that two separate aspects of social networks (perceived inadequate support and frequent contact with relatives) were associated with mental health service use, but the differential effect for women with and without and mental illness was not estimated. In the sample, the mean (weighted) inadequate support score for women without mental illness was 2.13 (SE = 0.03); the mean for women with mental illness, was higher at 2.48 (SE = 0.11). A univariate weighted

logistic regression that used mental illness as an outcome variable (0: CIS-R score 0-11, 1: CIS-R score 12 or more), and inadequate support as a continuous explanatory variable, showed that women with higher levels of inadequate support were more likely to have mental illness (OR = 1.96, CI = 1.34-2.86, p=0.001). In order to test if there was difference in the association between inadequate support and use of mental health service, by presence of mental illness, an interaction term of inadequate support and mental illness was added to Model 5, resulting in Model 7a (see Appendix 5.7). The interaction term was significant (OR = 0.39, CI = 0.16 – 0.96, p=0.040), suggesting that the effect of inadequate support on use of mental health services in women without mental illness (OR = 3.11, CI = 1.58 – 6.16, p=0.001) was greater than the effect of inadequate support on use of mental health services in women with mental illness (OR = 3.11 x 0.39 = 1.21). The BIC for this model was 25,161, a decrease of 442 compared with Model 5, suggesting that the model with interaction terms was a better fit to the data than Model 5.

Frequent contact with relatives was found to reduce mental health service use. In the sample, 15% (weighted percentage) of women who had frequent face to face contact with relatives had mental illness. This was lower than for women who had no frequent contact with relatives or women who had no relatives outside the household (22%). A univariate weighted logistic regression that used mental illness as an outcome variable (0: CIS-R score 0-11, 1: CIS-R score 12 or more) and contact with relatives as a binary explanatory variable, showed that women with frequent contact with relatives were less likely to have mental illness, but this was not significant at the 5% level (OR = 0.62, CI = 0.37 – 1.01, p=0.055). In order to test if there was a difference in the association between contact with relatives and use of mental health services, by presence of mental illness, an interaction term of contact with relatives and mental illness was added to Model 5, resulting in Model 7b (see Appendix 5.8). The interaction term was not significant (OR = 0.67, CI = 0.16 – 2.82, p=0.580), suggesting that the association between frequent contact

with relatives and mental health service use did not differ for women who had mental illness and those that did not. The model also had a higher BIC (26,000, increase of 397) than Model 5, suggesting that the model with interaction terms was a worse fit than Model 5.

Relationship between ethnic group, mental illness and service use. Mental illness was one of the largest predictors of mental health service use in the models presented in the previous sections. Descriptive analysis reported in section 5.4.2 showed that there were differences in the proportions of women with mental illness in each ethnic group. Pakistani (26%), Indian (23%), Black Caribbean (20%) and White Irish (20%) women showed the highest levels of mental illness, whilst Bangladeshi (11%) and White (18%) women showed the lowest levels. In order to test if there was a difference in the association between mental illness and use of mental health services between Pakistani women and women of other ethnic groups, an interaction terms of mental illness and ethnic group was added to Model 5, resulting in Model 7c (see Appendix 5.9). The interaction terms between each ethnic group and mental illness were not significant for any women apart from the Bangladeshi group (OR = 0.13, CI = 0.02 – 0.92, p=0.041). This suggests that the odds of using mental health services for Bangladeshi women with mental illness (OR = 6.19 x 0.13 = 0.82) were less than for Pakistani women with mental illness (OR =6.19, CI = 2.12 – 18.1, p=0.001). The model had a slightly higher BIC (25,623, increase of 20) than Model 5, suggesting that the model with interaction terms was a worse fit than Model 5.

5.5. Discussion

5.5.1. Main Findings

This study investigated how Pakistani women's rates of mental health service use, compared with women of other ethnic groups, the associations between aspects of social

networks and mental health service use, and how this differed between Pakistani women and women of other ethnic groups, using a nationally representative sample in England. The findings show that Pakistani women were less likely to have used mental health services than all other ethnic groups (except for Bangladeshi women). These differences were also apparent after adjusting for many other potential explanatory factors in the models, including levels of mental illness, socioeconomic factors, and demographic factors. It was also found that Pakistani women born outside of the UK were less likely to have used mental health services, compared with Pakistani women born in the UK. This finding was not evident for Bangladeshi, Indian, Black Caribbean or White Irish women. English proficiency (tested for Pakistani, Indian and Bangladeshi women) was not associated with mental health service use. Mental illness was the main driver of mental health service use, with women with mental illness over 6 times as likely to use services as those without mental illness. Women who were "other economically inactive" (most of these women were not working due to sickness or disability) were more likely to have used services, compared with those that were employed. Income did not have any association with mental health service use.

Two aspects of social networks were associated with mental health service use. Frequent face to face contact with relatives was found to reduce the odds of using mental health services, and women who perceived higher levels of inadequate support were more likely to use services. When social network characteristics were added to the model, ethnic differences remained. Through the addition of interactions terms in models, it was found that these associations did not vary between women of different ethnic groups. There was no association between the other aspects of social networks (frequent contact with friends, network content and size of network) and use of mental health services. However, by using models stratified by ethnic group, it was apparent that social network associations with mental health service use were not the same across ethnic groups. For Pakistani women,

large networks were associated with increased odds of using mental health services; this was not found for women of any other ethnic group. Further, the association between inadequate support and service use found in models incorporating all women was only found for White and White Irish women in stratified models. The association between frequent contact with relatives and service use was only found in the model for Bangladeshi women.

5.5.2. Comparison with other studies

The results from this study corroborate findings from other UK observational studies and systematic reviews that show use of mental health services for Pakistani women to be lower than for White and Black Caribbean women, but no different from Bangladeshi women (Glover & Evison, 2009; Kapadia, Brooks, Nazroo, & Tranmer, 2015; Lloyd & Fuller, 2002). Contrary to the findings of these previous studies, this study also showed that Pakistani women's rates of mental health service use were lower than those for Indian women. These ethnic differences remained after taking into account the contribution of a number of explanatory factors, including four separate aspects of social networks. This suggests that there are other factors, not captured by this study's modelling process that influence mental health service use. It is possible that women from Pakistani and Bangladeshi ethnic groups may not know where to seek help for mental health problems, although this is unlikely as population surveys have shown that these groups are the most likely to visit a GP for physical health problems (Brewin, 1980; Nazroo et al., 2009). However, even if it is assumed that Pakistani and Bangladeshi women know where to seek help, they may not wish to due to the stigma associated with having mental health problems. Previous qualitative studies have suggested that there are high levels of stigma amongst Pakistani women (Chew-Graham et al., 2002; Cinnirella & Loewenthal, 1999) and there is some evidence to suggest that stigma may be higher in some ethnic minority groups, compared with the White majority population, and this explains why help-seeking

is low in some ethnic minority populations (Anglin et al., 2006; Clement et al., 2015; Conner et al., 2010; Loya et al., 2010; Nadeem et al., 2007; Pescosolido et al., 2013; Rao et al., 2007). Unfortunately, stigma was not measured in the survey used for the present study, and hence the stigma displayed by Pakistani women could not be compared with women of other ethnic groups. One other possible explanation is that health professionals such as GPs may hold cultural stereotypes which may lead to the under-referral of some South Asian groups to mental health services (Burr, 2002; J. Cooper et al., 2006).

Pakistani women born outside of the UK were less likely to have used mental health services than Pakistani women born in the UK. Almost all Pakistani women aged over 35 in the sample were born outside of the UK. Previous studies have suggested that English proficiency may be low for older Pakistani women, and hence they may experience problems in articulating mental distress to health professionals, accessing services, and engaging in mental health provision (Bowl, 2007b; Chew-Graham et al., 2002; Loewenthal, Mohamed, Mukhopadhyay, Ganesh, & Thomas, 2012). However, this study did not find evidence to suggest that English proficiency was associated with mental health service use. The strong positive association found between economically inactive women and the use of mental health services is one that has been found in another UK study (Bebbington et al., 2003). A large proportion of the women in this category were not working due to sickness or disability, which may be indicative of higher levels of mental illness for this group.

Finally, this study found that for Pakistani women, larger social networks were associated with increased outpatient mental health service use. This is inconsistent with findings from other studies that have found large social networks to be associated with decreased use of outpatient psychiatric services in population samples (Albizu-Garcia et al., 2001; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Sherbourne, 1988; Woodward et al., 2008), and that large networks are associated with decreased mental health inpatient

use in clinical samples (Albert et al., 1998; Becker et al., 1997). Hence the finding for Pakistani women in this study is surprising, especially as the association was evident even when other variables thought to influence mental health service use were taken into account. There is the possibility that there is something about being in a large network for Pakistani women that that is *not* supportive, which may increase levels of mental illness leading to increased rates of mental health service use. One possible reason for the findings for Pakistani women, is their high likelihood of living in multiple-generation households, compared with other ethnic groups (Berthoud & Beishon, 1997) coupled with the high propensity for them to be looking after the home or family (Kapadia, Nazroo, et al., 2015), which could lead to high levels of mental distress (Sonuga-Barke & Mistry, 2000), and an increase in mental health service use. Large networks with such a composition might not be particularly supportive (Dressler, 1985; Furnham & Shiekh, 1993). However, Bangladeshi women also have high levels of living in extended families and this finding was not apparent for them. It is also important to note that the odds ratios for the larger network categories (3 to 7 close people, and 8 or more people) were large, and the associated confidence intervals wide. Hence the estimates are not precise, and may be based on very few women in these categories, and so this finding in relation to large networks must be viewed with caution.

This study also contributes novel findings (in the England context) of the association between aspects of social networks and mental health service use for women. Women with higher levels of inadequate support were more likely to use mental health services. This suggests that women who perceive their close networks to be lacking in support are more likely to turn to statutory services for help with mental health problems. The finding from this study is closely related to those from most other studies in this field, which have found that higher levels of perceived positive support are associated with decreased mental health service use (Golding & Wells, 1990; Maulik et al., 2009;

Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008). The finding from this study is slightly different because perceived positive support was not associated with mental health service use, but perceiving a lack of support from close people was. This may be because this study included measures of negative aspects of support networks (which were strongly loaded on the inadequate support factor), as well as positive aspects of support which is in contrast to the other studies cited here, apart from Maulik and colleagues' study (2009) which included both aspects of support. In addition, this study also found that there was no differential effect of social support on mental health service use between women of different ethnic groups; this is in line with one other study conducted by Chang and colleagues (2014) in the US that found support from friends and family did not affect mental health service use.

The present study also found that contact with relatives was associated with use of mental health services for women in England. This corroborates evidence from the United States where Sherbourne (1988), and Kouzis and colleagues (Kouzis et al., 2000) have shown that frequent contact with relatives is associated with decreased use of mental health services. Increased contact with relatives may be indicative of higher levels of social support which may in turn reduce the need for mental health services. However, the current analysis does not rule out an alternative explanation; relatives may hold negative views about mental illness, and mental health services, deterring women from contacting services (Gourash, 1978). This explanation could not be tested in the current study, as EMPIRIC did not collect data about relatives' attitudes to mental health services.

5.5.3. Strengths and Limitations

This is the first study in England to look at variations in mental health service use between women of different ethnic groups, and the association with social networks. The study's main strength is the use of a nationally representative sample that used ethnic minority boost sampling, allowing findings to be generalised to the population of England.

It also provides separate results for Pakistani, Indian and Bangladeshi women, in contrast to previous survey studies that have not disaggregated the South Asian category or have very small numbers of ethnic minority participants, thereby reducing the specificity of findings (C. Cooper et al., 2010, 2013).

One of the study's limitations is that the data are from 2000, which makes the findings less generalisable to the current context. There are more services available from the NHS now than were available in 2000, most notably services provided under the umbrella of Improving Access to Psychological Services (IAPT), a large scale Department of Health funded initiative to provide short term talking therapies for anxiety and depression. Hence it is possible that the ethnic differences in service use in 2000 (found by this study) may not be apparent now. Although, evidence from the most recent IAPT figures show that rates of referral to these new services are lower for Pakistani, Bangladeshi and Indian groups, compared with White groups (Community and Mental Health Team: Health and Social Care Information Centre, 2014a, 2014b). It is also important to note that the outcome variable did not cover all types of mental health services, i.e. inpatient services, services accessed through the voluntary sector, other types of outpatient services, and hence the findings cannot be generalised to women's usage of all mental health services.

Although measures of social support were included in the analysis, this was only in relation to what was perceived from the two closest people; the nature of support from wider social networks and sources other than partners, friends and relatives was not assessed. Hence it is possible that the amount of support from networks may have been underestimated. For women in the study that met criteria for mental illness, it was not known which network members they discussed their problems with, what these network members' attitudes were towards mental illness and the use of services, nor their own previous experiences of mental illness. These three factors have been shown to be

influential in the help-seeking process (Perry & Pescosolido, 2015; Vera et al., 1998); unfortunately they were not collected in the dataset used for this study.

This study did not include measures of prejudice or discrimination from health professionals, which may have been one factor that influenced decisions to seek mental health care. This may especially be the case for women that felt they had been judged or treated in a negative way due to their ethnic group, in previous encounters with health professionals. For example, previous studies have shown this to be the case for people from many different ethnic minority groups when seeking and receiving mental health care from health professionals (Bhui et al., 2012; Gabbidon et al., 2014; Henderson et al., 2015; McKenzie & Bhui, 2007; Rogers & Pilgrim, 2010).

Further, as the study is cross-sectional, reverse causality in relation to service use and social networks cannot be ruled out. It is possible using mental health services may lead to less contact with relatives or perceived inadequacy of support from networks. It is also possible that lack of service use for women could serve to increase levels of mental illness.

5.5.4. Conclusions and Implications

This study showed that Pakistani and Bangladeshi women were the least likely ethnic groups to have used mental health services. As the ethnic differences were not explained by any of the factors considered in this study, other factors such as the treatment of ethnic minority women in primary and secondary care in the NHS may be one of the reasons for ethnic inequalities. Evidence from the most recent IAPT figures show that rates of referral to these new services are lower for Pakistani, Bangladeshi and Indian women, compared with White women (Community and Mental Health Team: Health and Social Care Information Centre, 2014b). This, together with the high rate of consultation in primary care among these groups for physical health problems, suggests that the identification and management of mental health problems in primary care practice for these

women is less than adequate. Policymakers who wish to ensure that those in need of mental health services receive them, should consider the practice of clinicians in the drafting of future race equality policies for mental health services.

This study showed that aspects of social networks were associated with aspects of mental health service use, assuming that the association was direct. However other analyses within this thesis showed that social networks were associated with mental illness (Chapter 4) and this study showed that mental illness was strongly associated with mental health service use. It is possible that the associations between aspects of social networks and mental health service use are apparent because social networks influence mental illness, which in turn influences mental health service use (Gourash, 1978). This proposed path was not tested in this chapter, but the next chapter in this thesis assesses if aspects of social networks operate in this way (indirectly via mental illness) to influence mental health service use, and whether this indirect effect is the same for Pakistani women, as for women of other ethnic groups.

Chapter 6: How do social networks influence use of mental health services for Pakistani women, compared with women of other ethnic groups?

6.1. Introduction

Research studies conducted in the United States and the Netherlands have shown that social support networks impact on the use of mental health services, with greater support (less support) being related to decreased (increased) mental health service use (Golding & Wells, 1990; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008). Other aspects of social networks such as frequent contact with relatives (Kouzis & Eaton, 1998; Sherbourne, 1988) and larger networks have also been shown to reduce mental health service use (Albizu-Garcia et al., 2001; Pescosolido, Wright, et al., 1998; Sherbourne, 1988; Woodward et al., 2008). The previous chapter in this thesis showed that some of these relationships were also found for women in England. Women who perceived more inadequate support in their networks were more likely to use mental health services, and women who had frequent contact with their relatives were less likely to use mental health services. For Pakistani women it was found that larger networks increased mental health service use, contrary to previous research.

The rationale for the analysis in the previous chapter was to discern if the under-use of outpatient mental health services evident for Pakistani women (as found in the systematic review in Chapter 3, and the first part of the analysis presented in Chapter 5 [section 5.4.3]) could be explained by differences in social network effects between Pakistani women, and women of other ethnic groups. The analysis found that statistically there were not any differences between the effects of social networks on mental health service use between Pakistani women and women of other ethnic groups. However, when stratified analyses were undertaken, it was found that larger networks increased the odds of

use of mental health services for Pakistani women, but this relationship was not found for women of any other ethnic groups.

The analysis in the previous chapter only tested if there was a *direct* association between social networks and mental health services and if this association differed between women of different ethnic groups. One possible mechanism by which support in networks, contact with relatives and size of networks may affect mental health service use is by reducing the propensity to develop mental illness (Almeida et al., 2011; Cohen & Wills, 1985; Kessler et al., 1985; Stafford et al., 2011; Stansfeld et al., 1998), which in turn reduces mental health service use i.e. an *indirect* effect. Although the relationship between social networks and use of mental health services has been extensively investigated (Albizu-Garcia et al., 2001; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Pescosolido, 1992; Sherbourne, 1988; Ten Have et al., 2002; Thoits, 2011), few studies have attempted to assess if the impact of social networks on mental health service use operates in this way. Those that have investigated this mechanism in US samples (Golding & Wells, 1990; Lindsey et al., 2012; Martinez & Lau, 2011; Villatoro & Aneshensel, 2014) have found evidence that positive aspects of networks decrease the likelihood of having a mental illness, which decreases mental health service use.

Despite evidence from the US, there have not been any studies undertaken with UK data to test this mechanism. Further, there have not been any studies that have attempted to assess if this mechanism differs between ethnic groups. This may be important, as there is evidence to suggest that if there is an indirect effect of social networks on mental health service use via mental illness, this may not be the same for Pakistani women as for other ethnic groups, and this may be the case for two reasons. First, it was found in the systematic review in Chapter 3, and in empirical work in Chapter 4, that Pakistani women were more likely to feel their social networks were lacking in social support, compared with White British and White Irish women (Calderwood & Tait, 2001; Natarajan, 2006;

Stansfeld & Sproston, 2002), and second, it was found in Chapter 5 that the relationship between mental illness and use of mental health services differed between Pakistani and Bangladeshi women, with women in the latter group with mental illness less likely to use mental health services than Pakistani women.

Hence, this chapter addresses this gap in current knowledge, by answering the research questions that are outlined in the next section. This was done by developing a structural equation model of indirect effects of social networks on mental health service use to test if these effects were apparent, and if they differed between Pakistani women and women of other ethnic groups.

6.2. Research Questions

i. Is the influence of social networks on mental health service use mediated by mental illness?

ii. Do the mediation effects differ for Pakistani women, compared with women of other ethnic groups?

6.3. Methods

6.3.1. Data: Design and Sample

The analysis uses the same dataset, as that used in the previous chapter: Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC) (National Centre for Social Research & University College London, 2003). EMPIRIC is a nationally representative cross-sectional survey of adults (aged 16 to 74 years) conducted in England in 2000 (n=4,281). The aim of the survey was to report the level of mental illness in five ethnic minority groups (White Irish, Black Caribbean, Bangladeshi, Indian, and Pakistani), compared with the White majority population, as well as collecting information on

physical health, social support and access to health services. More detail on the sample design and non-response adjustments were given in section 5.3.1 in the previous chapter. For the current analysis, only women were selected (n=2,340). During the analysis 103 women (4.4%) were dropped due to missing data on one or more covariates, giving a sample size of 2,237[1].

The variables described here, were measured by questions on the EMPIRIC survey. The ways in which the outcome and explanatory variables were constructed, and justifications for these, were outlined in detail in sections 5.3.2 to 5.3.6 in the previous chapter. Where variables were constructed or used differently for the current analysis, full explanations are given within this chapter.

6.3.2. Outcome Variable

The outcome variable was mental health service use (0: not used any services, 1: seen a doctor for a stress-related or emotional problem, or seen a counsellor, or seen a psychologist in the last 6 months). This was defined in the same way as in the previous analysis chapter.

6.3.3. Social Network Measures

Three separate aspects of social networks, that were found to be associated with mental health service use in the previous chapter, were used in models in this chapter.

Frequent contact with relatives. Frequent contact with relatives was found to reduce the likelihood of women using mental health services, when used in models incorporating all women in the sample. Having frequent contact with relatives was also moderately associated with decreased risk of having a mental illness (results of univariate

[1] In the previous chapter, the final sample size was 2,260. The 23 extra cases that were omitted from the current analysis were women who did not have any data on the Close Persons Questionnaire (measurement of social support). In the previous analysis, the lowest positive and highest inadequate support scores were given to women with missing data. These were women without any close persons, so it was assumed that they would have minimal support. In the current analysis, missing data on the social support items were left as missing.

regression from previous chapter: OR = 0.62, CI = 0.37 – 1.01, p=0.055). As outlined in the introduction (section 6.1), frequent contact with relatives may reduce mental illness which in turn reduces mental health service use. In the previous chapter, frequent contact with relatives was used as a three category variable (0: no frequent contact, 1: frequent contact, 2: no relatives). However, a relatively small percentage of women said they had no relatives (8.8%), compared with the other two categories. Therefore this category was merged with the category of no contact. This was done in order to be able to interact this variable with ethnic group in the moderated mediation part of the analysis (further details of this statistical method are given below in section 6.3.6).

Inadequate Support. The perceived inadequate support in networks influenced the likelihood of using mental health services, with women with higher levels of inadequate support more likely to use mental health services. Inadequate support also showed an association with mental illness, with women with higher levels of inadequate support more likely to have mental illness (results of univariate regression from previous chapter: OR = 1.96, CI = 1.34 – 2.86, p=0.001). Inadequate support in the previous chapter was constructed with an exploratory factor analysis of the Close Persons' Questionnaire (Stansfeld & Marmot, 1992). In this chapter, Confirmatory Factor Analysis was used to construct this facet of support. The reasons for this, and full details of the construction of inadequate support, are given below in section 6.3.6.

The other factor that was extracted in the exploratory factor analysis of the Close Persons' Questionnaire in the previous chapter was positive support. There was no association between positive support and mental health service use, as reported in the previous chapter (results from fully adjusted logistic regression model: OR = 0.94, CI = 0.61 – 1.45, p=0.781). In addition there was no association between positive support and mental illness (results from univariate logistic regression model: OR = 0.74, CI = 0.51 – 1.08, p=0.122). Hence, since there was no empirical evidence that positive support was

associated with mental illness or mental health service use in this sample, its effect was not theorised to operate via mental illness, and it was not included as an explanatory variable in the models presented in this chapter.

Size of network. For Pakistani women, an increase in the number of close people in the social network was associated with an increase in mental health service use. They were the only ethnic group for whom this association was evident. However, there was no association between size of networks and mental illness for Pakistani women (results of univariate logistic regression: OR = 1.02, CI = 0.59 – 1.77, p=0.939). For all women in the sample, there was no association between social network size and mental health service use in fully adjusted models, but there was an association between social network size and mental illness, with larger networks associated with a decrease in levels of mental illness (results of univariate logistic regression: OR = 0.50, CI = 0.28 – 0.89, p=0.019). Therefore in order to ascertain if there was any discernible effect of size of network on mental health service use via mental illness, this social network variable was also used in models. It was important to consider this social network variable even if effects were not apparent for other ethnic groups in the analysis in Chapter 5, since the specific focus of this thesis was to investigate how social networks operate for Pakistani women, compared with women of other ethnic groups.

In the previous chapter, the number of close people in the network was used as a three category variable (0: 0 to 2 people, 1: 3 to 7 people, 2: 8 or more people). For the analysis in this chapter, the categories of “3 to 7 people” and “8 or more people” were combined, producing a binary variable. This was done because in the previous chapter the coefficients for these two groups were in the same direction for Pakistani women. Further, this variable was to be used in the creation of interaction terms (with ethnic group) for later parts of this analysis and hence, fewer categories were preferable.

6.3.4. Mediator Variable: Mental Illness

Mental illness was measured by the CIS-R (Lewis et al., 1992) and was used as the mediator variable (full definition and description of mediators and mediation analysis are given below in section 6.3.6). This was used as a binary variable (0: does not meet clinical criteria for mental illness 1: meets clinical criteria for mental illness). The variable was not used as continuous, because of the large proportion of women who scored zero out of a maximum of 57 (25%).

6.3.5. Control Variables

Other explanatory variables that were thought to have an effect on mental health service use (as detailed in the previous chapter) were also used in the model. These were age (categorical variable: 16 to 34 years, 35 to 54, 55 to 74), marital status (categorical variable: married, single, separated/ divorced/ widowed), equivalised household income (categorical variable: 5 quintiles), employment status (categorical variable: employed, unemployed, retired, other economically inactive), network content (categorical variable: spouse and relative, spouse and friend, friend and relative, relatives, friends and one or no close people), frequent contact with friends (binary variable: 0 does not have frequent face to face contact with friends, 1: frequent face to face contact).

These explanatory variables were added as direct effects on mental health service use. Their effects were not hypothesised to operate via mental illness, although it is possible that some of these variables operate via mental illness. However, the specific aim of this thesis was to investigate how social networks influence mental health services. Hence the potential mediation effects of other characteristics were not tested here.

6.3.6. Statistical Modelling Approach

The analysis used structural equation modelling to answer the research questions. The final model consisted of a Confirmatory Factor Analysis (CFA) of social support items

and a moderated mediation analysis carried out jointly in one model. During the analysis process, the CFA model was done first, in order to obtain a good-fitting model to the data. Second, the CFA and mediation analysis were done together. Finally, the CFA and moderated mediation analysis were performed together.

Confirmatory Factor Analysis. In the previous chapter, an exploratory factor analysis (EFA) of the Close Persons Questionnaire (CPQ (Stansfeld & Marmot, 1992), was undertaken in order to reduce 12 items measuring social support to two factors: positive aspects of support and a factor measuring the inadequacy of support from the two closest persons. EFA is a data-driven technique, that does not pre-specify any supposed patterns between the items and underlying factors (or constructs) thought to cause the observed items (T. A. Brown, 2015). Accordingly, in this type of analysis, each item in a questionnaire can freely load onto each of the underlying factors (e.g. item 1 is free to load onto both Factors X and Y (for a two factor model), as are all items in the analysis). In contrast, Confirmatory Factor Analysis (CFA, Joreskog, 1969) is a hypothesis-driven technique that uses previous theory and research evidence (Byrne, 2012; Scott Long, 1983) (in this case, the results from the previous chapter's EFA of the same data), to produce a measurement model with a pre-specified number of factors that are thought to explain the observed correlation between items (in this case, social support items on the CPQ). In addition, only items thought to be caused by each underlying factor are specified to load on to that factor: e.g. item 1 loads onto Factor X but does not load on to Factor Y, and all other items are also specified to load on to only one factor[1]. CFA was used on the CPQ items, to confirm the two factors that were found in the EFA in the previous chapter.

The CPQ measures support from the two closest persons named by the participant. The 12 items that were selected to be used for the analysis were categorical in nature with

[1] Items can be specified to cross-load i.e. load onto more than one factor. This is explained in more detail in section 6.4.

four response categories (not at all, a little, quite a lot, a great deal). In the previous chapter, the factor analyses for the first and second closest persons were done separately and the highest score out of the two people was used in subsequent analysis i.e. the highest positive support score, and the highest inadequate support score out of the two closest people. This chapter continues to use the highest support scores but uses a slightly different method to construct them.

For the CFA in this chapter, the closest person that provided the most positive support (as indicated by highest positive support score from the EFA in the previous chapter) was identified, and the item scores from this person were used. The same method was used to identify the closest person that provided the highest level of inadequate support. For most women, the first closest person provided the most support and was also the one that was most likely to provide the highest level of inadequate support. However, this was not the case for a minority of women, for whom the most positive support and highest level of inadequate support came from the second closest person. For positive aspects of support, the second closest person scores were used for 628 women (26.8%), and for inadequacy of support, the second closest person scores were used for 526 women (22.5%). Further, only the items that showed high loadings on each factor in the previous chapter were used in the CFA in this chapter. Table 6.1 shows the items that were selected to load onto each factor, along with the factor loading scores from the previous chapter. The method of estimation for the CFA was weighted least squares with mean and variance adjustment (WLSMV). This method is appropriate for use with categorical indicators (T. A. Brown, 2015). As the CPQ yielded answers that were categorical in nature, the CFA was performed on the polychoric correlation matrix of the responses to the items.

Table 6.1: Support factors extracted from Exploratory Factor Analysis with factor loadings for influential items (from first closest person), from analysis in Chapter 5

Support factors extracted from Exploratory Factor Analysis with factor loadings for influential items (from first closest person)	**Factor loading**
Positive Support	
1. Did this person give you information, suggestions and guidance that you found helpful?	0.738
2. Could you rely on this person? Was this person there when you needed them?	0.741
3. Did this person make you feel good about yourself?	0.666
4. Did you share interests, hobbies and fun with this person?	0.548
5. Did you confide in this person?	0.680
6. Did you trust this person with your most personal worries and problems?	0.646
7. Did this person give you practical help with major things?	0.573
8. Did this person give you practical help with small things when you needed it, for example, chores, shopping, watering plants etc. ?	0.510
Inadequate Support	
1. Did this person give you worries, problems and stress?	0.247
2. Would you have liked to have confided more in this person?	0.480
3. Did talking to this person make things worse?	0.516
4. Would you have liked more practical help with major things from this person?	0.643

Mediation Analysis. When the CFA (measurement model) was finalised, this was used together with a mediation analysis (structural part of model) to answer research question one (Is the influence of social networks on mental health service use mediated by mental illness?). A mediator is a mechanism through which an independent variable is thought to influence an outcome of interest (Baron & Kenny, 1986; Iacobucci, 2008) i.e. the independent variable is thought to influence the outcome *indirectly*. The idea of indirect effects (Hayes, 2013) is key to mediation analysis and typically mediation can be thought of as decomposing the effect of an independent variable (X, see Figure 6.1) into its direct effect (***c'***) on an outcome (Y), and indirect effects (***a*** and ***b***) on an outcome (Y) via a mediator (M). The indirect effect is defined as ***a*** multiplied by ***b*** (Mackinnon, Fairchild, & Fritz, 2007); this is equivalent to the total effect (known as ***c***) minus the direct effect (***c'***).

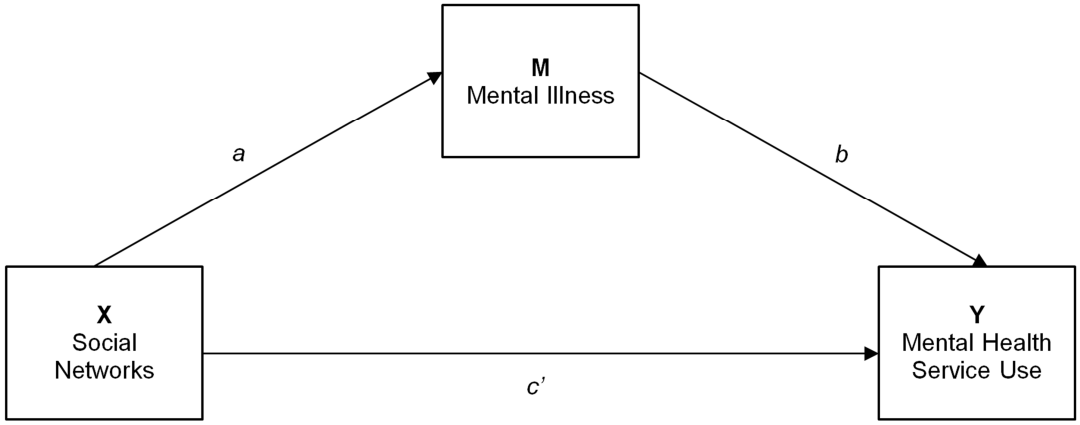

Figure 6.1: Mediation Model

A mediation analysis was appropriate here because one of the aims of this thesis is to understand *how* social networks influence mental health service use. It was found in the previous chapter that there were associations between certain aspects of social networks and mental health service use. However, the results of the model in the previous chapter could not be used to state *how* or *why* these two things were associated. The analysis in the previous chapter also found a positive association between mental illness and mental health service use. This chapter tests whether the effects of social networks operate via mental illness to exert their effects on mental health service use. There are a number of assumptions underlying mediation modelling: no unmeasured confounding in the exposure-outcome relationship; no unmeasured confounding in the mediator-outcome relationship; no unmeasured confounding in the exposure-mediator relationship; and no effect of the exposure that confounds the mediator-outcome relationship (VanderWeele, 2010). Although this study adjusted models for a large number of theoretically and empirically founded variables, there is still the possibility that some unmeasured confounding remains. Hence, results from the model should be interpreted with this in mind.

In order to perform a mediation analysis, the timing of measurement of the X variable (social support) should be before the mediator (mental illness), which in turn should be before the measurement of the outcome variable (mental health service use) (Iacobucci, 2008; Mackinnon, 2008), in order to make any claims about temporal causality. In the current analysis, these conditions were not met, as all aspects of the mediation model were measured within one cross-sectional survey. Within the survey, social support (as measured by the Close Persons Questionnaire) was asked in relation to the previous 12 months, mental illness (measured by the CIS-R) in relation to the past month, and mental health service use in relation to the past 6 months. Hence, the mediation model in this analysis cannot be used to directly assess the causal nature of the influence of social networks on mental health service use, via a mediator (mental illness).

It would have been preferable to have measures of social support and mental illness that were measured before mental health service use. In order to assess the causal effects of social networks on mental health service use, consideration was given to using measures of these from the Health Surveys for England (HSE) 1998 and 1999 (Erens & Primatesta, 1999; Erens et al., 2000). All ethnic minority participants in EMPIRIC were followed up from HSE 1999, and White participants in EMPIRIC were followed up from HSE 1998. Measures of mental illness (the General Health Questionnaire 12 item version (GHQ12, Goldberg & Williams, 1988) and social support (perceived social support items taken from The Health and Lifestyle Survey (Cox et al., 1987)) were available in these surveys. However, use of these was discounted for two reasons. Firstly, mental illness and social support were measured in different years for ethnic minority women, compared with White women, thereby making comparison of estimates between White women and ethnic minority women problematic. Hence, although the coefficient for the path between social support and mental illness may have been comparable, the paths between social support and service use, and mental illness and service use would not have been comparable

(between ethnic groups) due to ethnic minority women's mental illness and social support being measured one year before service use, and White women's being measured two years before.

Secondly, the measurement of social support in the HSEs (seven items from The Health and Lifestyle Questionnaire (see Appendix 6.1)) was inadequate, compared with the CPQ. Most important is that there were no items measuring the inadequacy or negative aspects of support networks in the HSEs, and only three out of the seven items could be said to be measuring support (friends and family can be relied upon no matter what happens, would see that I am taken care if I needed to be, give me support and encouragement). This is in contrast to six items measuring positive support (items 1, 2, 5, 6, 7, 8 under positive support in Table 6.1 above) and four items (all items under inadequate support in Table 6.1) measuring inadequate support in the CPQ.

Therefore the analysis was carried out using cross-sectional data from the EMPIRIC survey. This was not ideal but mediation analysis is possible with this type of data (Cole & Maxwell, 2003; Hayes, 2013), as long as theory dictates the modelling process, and caveats are issued in relation to the model results (the limitations of mediation with cross-sectional analysis are considered in more detail in the Discussion (section 6.5)). Further, it is important to note that if longitudinal data were available this would not have dispensed with potential problems in mediation analysis. The timing of measurements in longitudinal data may not be at intervals that make theoretical sense for a mediation model and hence cannot always be deemed as a superior type of data.

The mediation analysis tested the direct and indirect effects of the following social network variables on mental health service use: inadequate support (factor extracted from the CFA described in the previous section), frequent contact with relatives, and number of close people via a mediator, mental illness. Probit regression was used with the WLSMV estimator, as this is the most appropriate for binary outcome data. It is possible to use

logistic regression in Mplus for binary outcomes, but the computation requires numerical integration which is very intensive. Often models do not converge when using this modelling technique, hence the probit model was preferred (Mackinnon, 2008). The mediator, mental illness, was used as a binary variable (0: no mental illness 1: meets clinical criteria for mental illness).

When using a binary mediator and WLSMV estimation in the modelling process, the Mplus software assumes that there is a continuous latent variable underlying the mediator (Muthen, 2011), in order to calculate indirect effects (product of paths ***a*** and ***b***). As the distribution of the mediated effect is unknown, it is recommended that bias-corrected bootstrapped[1] 95% confidence intervals are calculated for the indirect effects (Mackinnon, 2008), using 1,000 bootstrap draws (Efron & Tibishirani, 1993 cited in Mackinnon, 2008). This type of bootstrapping provides the most accuracy for computing confidence intervals for non-zero mediation effects (Efron, 1987). Confidence intervals of indirect effects that do not contain zero are deemed to be statistically significant.

However, when the mediation model was estimated using bias-corrected bootstrapping, although the magnitude and statistical significance (at 5% level) of indirect effects were the same as for the model without bootstrapping, some of the direct effects changed considerably, in a way that did not concur with model results from the previous chapter. For example, when bootstrapping was applied, ethnic differences in mental health service use between Pakistani and White and White Irish women disappeared, and household income quintiles 2, 4, and 5 became statistically significant, with women in these quintiles less likely to use mental health services. This suggested that bootstrapping

[1] The z-score (mediated effect/ standard error) is traditionally inspected for statistical significance, with values 1.96 times the z score considered to be statistically significant. However, previous simulation studies have shown that this statistic may not be normally distributed in mediation models, and hence it is not accurate to base statistical significance of an indirect effect on this statistic (Mackinnon, Lockwood, & Williams, 2004). The method of bias-corrected bootstrapping performs resampling with replacement to construct a sample of standard errors for the indirect effect. The bias correction adjusts the upper and lower percentiles of the confidence interval.

was not appropriate for this model. This may have been because one of the confidence interval limits was very close to zero (Andrews, 2000). In order to resolve this problem, consideration was given to reporting estimates for the direct effects from the model without bias-corrected bootstrapping and indirect effects from the model with bias-corrected bootstrapping. However, this is not advised by the developers of the Mplus software (Muthen, 2006). In addition, as the conclusions that could be drawn about indirect effects from the model with bias-corrected bootstrapped confidence intervals were the same as for the model without, all the results reported in this chapter are drawn from models that do not use bias-corrected bootstrapped confidence intervals.

Results are shown for the probit regression of mental illness on social network characteristics (unconditional effects), and the probit regression of mental health service use on social network variables, mental illness, ethnic group and control variables. In addition, the indirect, direct and total effects of social network characteristics on mental health service use were calculated. The proportion of the effect that was mediated was also calculated.

Moderated Mediation Analysis. In order to answer the second research question (Do the mediation effects differ for Pakistani women, compared with women of other ethnic groups?), moderated mediation (Hayes, 2013; Preacher, Rucker, & Hayes, 2007) was used. This was used to determine if the mediation effect was the same for Pakistani women when compared with women of other ethnic groups. Moderated mediation is thought to be present when "the strength of an indirect effect depends on the level of some variable, or in other words, when mediation relations are contingent on the level of the moderator" (Preacher et al., 2007: 193). In the present analysis, ethnic group was used as the moderator of path ***a*** (the association between social networks and mental illness) and path ***b*** (the association between mental illness and mental health service use). Figure 6.2 shows this model. The effect of ethnic group on the direct path from social network

variables to mental health service use[1] was not estimated, as it was the specific aim of this analysis to test if the mediation (indirect path) was different for other ethnic groups, compared with Pakistani women. Moderated mediation was only undertaken for social network variables for which indirect effects were found in the mediation model.

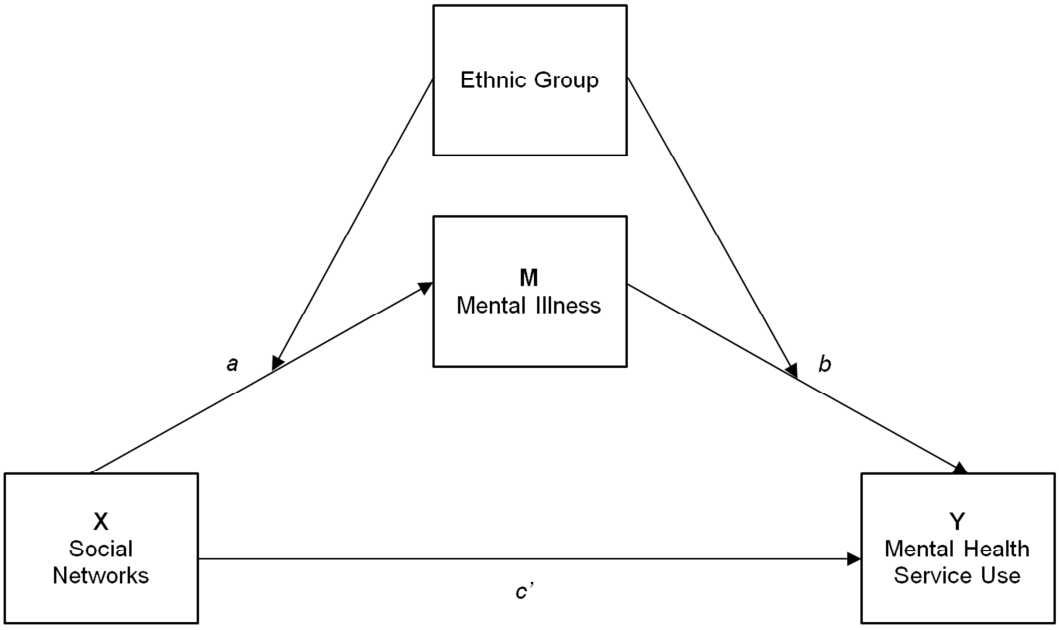

Figure 6.2: Moderated Mediation Model

To perform the moderated mediation analysis, interaction terms of ethnic group and social network variables were added to the regression of mental illness on social network variables, and interaction terms of ethnic group and mental illness were added to the regression of mental health service use on mental illness. Within the Mplus software, the command XWITH was used to create interaction terms between latent variables (inadequate support extracted by CFA from the Close Persons Questionnaire) and observed variables. This command is only available with maximum likelihood with robust standard errors (MLR) estimation. This type of estimation does not provide standardised estimates. Hence model results are given in unstandardised units only. Results are shown for the

[1] The previous chapter (using logistic regression modelling) tested for the effect of two interactions (ethnic group x inadequate support, and ethnic group x frequent contact with relatives) on mental health service use. Neither of these interactions was statistically significant at the 5% level.

probit regression of mental illness on social network variables, ethnic group and the interaction between ethnic group and social network variables, and for the probit regression of mental health service use on social network variables, mental illness, ethnic group and the interaction between ethnic group and mental illness (as well as the control variables selected for the analysis). The indirect effects of each social network aspect on mental health service use were calculated for women in each ethnic group. The differences in the indirect effects were calculated for each ethnic group, compared with Pakistani women (using the MODEL CONSTRAINT command in Mplus). This provided z scores which were assessed for statistical significance at the 5% level to ascertain if the mediation effects for Pakistani women were different, compared with women of other ethnic groups. Example Mplus code for how the indirect effects, and the differences in these effects between Pakistani women and women of other ethnic groups were calculated, are shown below in Box 6.1.

Box 6.1: Example Mplus code for the calculation of indirect effects, and differences in effects between ethnic groups

Key	
ind	Indirect effect for specified ethnic group
a1	Coefficient for effect of social network variable on mental illness for Pakistani women
a2 to a6	Coefficients for effect of social network variable on mental illness for White, Irish, Black Caribbean, Bangladeshi and Indian women, respectively
b1	Effect of mental illness on mental health service use for Pakistani women
b2 to b6	Coefficients for effect of mental illness on mental health service use for White, Irish, Black Caribbean, Bangladeshi and Indian women, respectively
diff	Difference in indirect effect between Pakistani women and specified ethnic group
*	Multiplied by

```
ind_Pakistani = a1*b1;
ind_White = (a1 + a2)*(b1 + b2);
ind_Irish = (a1 + a3)*(b1 + b3);
ind_BlackCaribbean = (a1 + a4)*(b1 + b4);
ind_Bangladeshi = (a1 + a5)*(b1 + b5);
ind_Indian = (a1 + a6)*(b1 + b6);
diff_White = (ind_Pakistani - ind_White);
diff_Irish = (ind_Pakistani - ind_Irish);
diff_BlackCaribbean = (ind_Pakistani - ind_BlackCaribbean);
diff_Bangladeshi = (ind_Pakistani - ind_Bangladeshi);
diff_Indian = (ind_Pakistani - ind_Indian);
```

Data manipulation was carried out in Stata 13 (StataCorp, 2013), and statistical analysis was carried out using Mplus 7.11 (Muthen & Muthen, 2012). An alpha value of 0.05 was used throughout as criterion for statistical significance.

6.4. Results

6.4.1. Confirmatory Factor Analysis of social support

The CFA was estimated separately first before it was estimated together with the mediation model. Twelve items from the CPQ were used as indicators of two hypothesised underlying factors: positive support and inadequate support. The polychoric correlation matrix between the 12 items, on which the CFA was based, is shown in Appendix 6.2. The correlation between the two extracted factors was -0.230. Factor 1 (positive support) was hypothesised to have loadings from eight items and factor 2 (inadequate support) was hypothesised to have loadings from four factors. Table 6.2 shows the factor loadings (standardised[1]) from each item on the two factors.

Table 6.2: Confirmatory Factor Analysis of Close Persons Questionnaire (n=2,237)

Factor	Item	Factor loading (standardised)	Standard Error (SE)
Positive Support	Give information, suggestions and guidance	0.725	0.034
	Rely on this person	0.672	0.041
	Person made you feel good	0.688	0.033
	Share interests, hobbies and fun	0.579	0.039
	Confide in this person	0.709	0.031
	Trust this person with problems	0.682	0.036
	Give practical help with major things	0.474	0.046
	Give you practical help with small things	0.448	0.048
Inadequate Support	Give you worries, problems and stress	0.517	0.050
	Liked to have confided more in this person	0.686	0.052
	Talking to this person made things worse	0.771	0.052
	Liked more practical help from this person	0.618	0.053

In order to assess how well this model fitted the data, a range of model fit indices were used. The chi squared test statistic provides an overall measure of goodness of fit. High values of chi squared suggest that the observed correlation matrix and the estimated correlation matrix from the model are not similar. Statistically significant p values provide

[1] The standardisation sets the mean to 0 and variance to 1 for indicator and latent variables.

evidence to reject the null hypothesis (the observed values are the same as the model values). For this model, chi squared = 166.38, df=53, p<0.0001, suggesting that the model was a poor fit to the data. However, the chi squared test statistic has many weaknesses (e.g. inflated chi squared test statistic with large sample sizes, very strict criteria of assessing if the observed correlation matrix matches the estimated correlation matrix) due to which, it should not be relied upon as the sole measure of model fit (T. A. Brown, 2015). The Root Mean Square Error of Approximation (RMSEA, Steiger & Lind, 1980) is another fit index that measures how well the model fits approximately, and ranges from 0 to infinity, although it rarely exceeds 1 (T. A. Brown, 2015). Models with values of 0.06 or less are considered to have close fit (Hu & Bentler, 1999). Mplus also provides the p value of RMSEA being =< 0.05. Non-significant probability values (p>0.05) suggest that the model is "close-fitting" (Brown, 2015: 72). For this model, the RMSEA was 0.031 (CI = 0.026-0.036 p>0.999), suggesting that the model was a very good approximate fit to the data.

The Comparative Fit Index (CFI, Bentler, 1990) evaluates the fit of the estimated model to the null model i.e. a model that assumes no correlations between the items used as dependent variables (social support items). The CFI ranges from zero to one, with values close to 1 indicative of good model fit. One other index of comparative fit is the Tucker-Lewis Index (TLI, Tucker & Lewis, 1973). This index compensates for model complexity by penalising models that add more parameters that do not improve the fit of the model (T. A. Brown, 2015). The TLI generally ranges between zero and one, but values can fall outside these bounds. Values approaching one suggest good model fit. Values of CFI and TLI that are close to 0.95 or greater are deemed to indicate good model fit, and models with values between 0.90 and 0.95 indicate acceptable model fit (Bentler, 1990). The CFI for the model was 0.930 and the TLI was 0.913, suggesting that the model was acceptable.

It is common practice with CFA models to inspect the standardised residuals of the difference between the observed polychoric correlation matrix and the matrix estimated by the model. High values of residuals (greater than |2|) suggest that some of the relationships between the indicators have been under or overestimated by the model (T. A. Brown, 2015). Unfortunately, standardised residuals were not available for categorical variables in Mplus (Muthen, 2015c). Hence, the other model fit statistics were relied upon to make a judgement on the goodness of fit of the model.

Mplus provides modification indices (Sorbom, 1989) as part of the model output. These show which parameters (that are currently set to zero) would decrease the chi squared statistic significantly and by approximately how much, if they were freely estimated. The expected parameter change (EPC) is also shown; how much that parameter would change and in which direction (from 0) if it was freely estimated. For this model, three such indices were identified by the software (see Table 6.3). Only modification indices greater than 3.84 were requested in the software (the reduction required in chi squared statistic for a statistically significant better fitting model). Each of these modification indices were cross loadings onto the other factor i.e. for an item that loaded onto the positive support factor, the modification index suggested an additional loading onto the inadequate support factor. The first modification index (MI) suggested loading the item measuring perception of worries and problems from the closest person onto positive support would reduce the chi squared statistic by 11.79, and would have a factor loading of 0.131. Substantively, this did not make sense; that answering positively to this item would give an increase in positive support. Therefore this modification was not implemented into the model. The second MI suggested loading the item measuring wanting to confide more onto the positive support factor, and the third MI suggested loading the item measuring if the close person made the participant feel good onto inadequate support. Both of these made substantive sense as the EPC was in the direction (negative) that would be expected.

Table 6.3: Modification Indices for the confirmatory factor analysis, provided by Mplus software

Suggested Parameter Estimation	Modification Index (MI)	Standardised Expected Parameter Change (EPC)
1. Load "gives worries, problems and stress" onto positive support	11.79	0.131
2. Load "wanted to confide more" onto positive support	13.75	-0.162
3. Load ""person made me feel good" onto inadequate support	4.37	-0.108

A second model was estimated that implemented Modification Index 2 into the previous model. The model results are shown in Table 6.4. The correlation between the two factors was -0.166. The RMSEA for this model was 0.030 (CI = 0.024 – 0.035, p>0.999) suggesting a good fitting model. Further the CFI was 0.936, and the TLI 0.919, suggesting an acceptable model. As Model 1 was nested within Model 2, a nested chi squared test was performed: chi squared = 8.971, df=1, p=0.0027. This suggests that Model 2 was a better fit to the data than Model 1. A third model was also estimated that added Modification Index 3 to Model 2. This model did not fit the data better than Model 2 (chi squared = 3.553, df=1, p=0.0594, results not shown). The final model (Model 2) is depicted in Figure 6.3.

Table 6.4: Confirmatory Factor Analysis of Close Persons Questionnaire (n=2,237) with modification index (Model 2) implemented

Factor	Item	Factor loading (standardised)	Standard Error (SE)
Positive Support	Give information, suggestions and guidance	0.725	0.034
	Rely on this person	0.672	0.041
	Person made you feel good	0.687	0.033
	Share interests, hobbies and fun	0.579	0.039
	Confide in this person	0.709	0.031
	Trust this person with problems	0.683	0.036
	Give practical help with major things	0.474	0.046
	Give you practical help with small things	0.449	0.048
	Liked to have confided more in this person	-0.152	0.052
Inadequate Support	Give you worries, problems and stress	0.538	0.050
	Liked to have confided more in this person	0.601	0.049
	Talking to this person made things worse	0.807	0.052
	Liked more practical help from this person	0.628	0.053

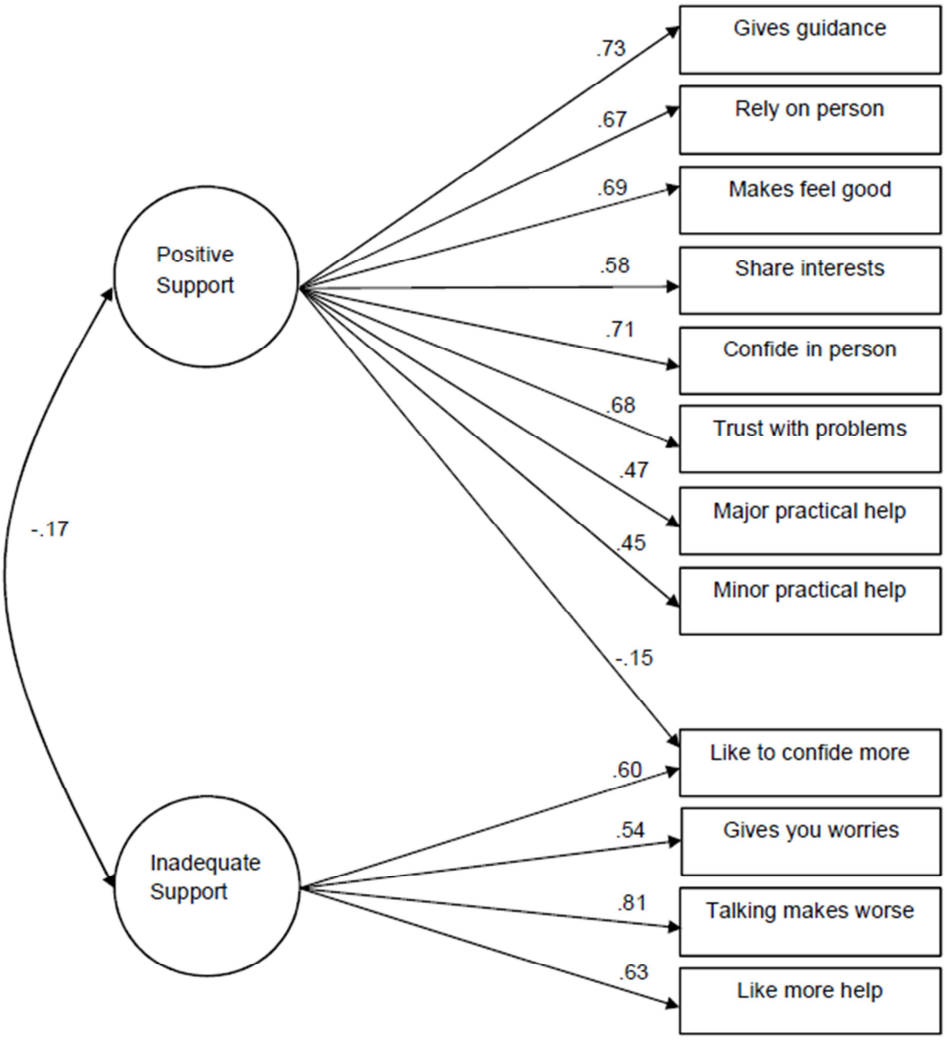

Figure 6.3: Confirmatory Factor Analysis of Close Persons Questionnaire (n=2,237). N.B. Values shown are standardised loadings rounded to 2 decimal places

6.4.2. Mental Illness as a mediator of the relationship between social networks and mental health service use

The results from the mediation model are shown in Tables 6.5 and 6.6, and summarised in Figure 6.4[1]. The estimated loadings from the CFA within the model are not shown in these tables in order to keep the focus of this section on the results of the

[1] Positive support was shown not to have any effect on mental illness nor mental health service use, in the analysis undertaken in the previous chapter, and for this reason, the mediation of positive support via mental illness is not theorised nor tested in models in this chapter.

mediation part of the model. The estimates from the CFA are given in Appendix 6.3, and also denoted in Figure 6.4.

The mediation model showed that an increase in inadequate support was associated with an increase in the likelihood of having a mental illness (β[1] = 0.526, SE = 0.10, $p<0.001$), but inadequate support was not directly associated with the usage of mental health services (β = 0.089, SE = 0.11, p=0.411). Frequent contact with relatives was associated with a lower likelihood of having a mental illness (β = -0.341, SE = 0.16, p=0.031), but as for inadequate support, frequent contact with relatives was not directly associated with use of mental health services (β = -0.269, SE = 0.20, p=0.185). Larger networks (containing 3 or more people) were associated with decreased levels of mental illness (β = -0.464, SE = 0.22, p=0.032) but there was no direct association between larger networks and mental health service use (β = 0.233, SE = 0.24, p=0.340).

[1] β denotes a unstandardised probit coefficient. Values over 0 indicate a positive effect and values below 0 indicate a negative effect. Standardised coefficients are provided in Table 6.5. However, standard errors were not provided in Mplus for these, and hence are not reported here. For continuous x variables (explanatory or control variables), the standardised value provided in the Mplus output under the column 'STDYX' was used. For binary variables, this estimate was divided by the sample standard deviation of the x variable in question to calculate the appropriate standardised coefficient (Muthen, 2015b).

Table 6.5: The effect of inadequate support, contact with relatives and larger networks on mental health service use, via mental illness (mediation model).
Values are unstandardised probit coefficients (standard errors) (n=2,237)

	Mental Illness			Mental Health Service Use		
	Unstandardised Coefficient (SE)	**Standardised* Coefficient**	**P-value**	**Unstandardised Coefficient (SE)**	**Standardised Coefficient**	**P-value**
Inadequate Support	0.526 (0.10)	0.401	<0.001	0.089 (0.11)	0.064	0.411
Frequent Contact with Relatives	-0.341 (0.16)	-0.330	0.031	-0.269 (0.20)	-0.242	0.185
Larger networks (>= 3 people)	-0.464 (0.22)	-0.430	0.032	0.233 (0.24)	0.208	0.340
Mental Illness				0.467 (0.08)	1.236	<0.001
Ethnic Group (Ref. Pakistani)						
White	-0.111 (0.20)	-0.061	0.584	0.643 (0.24)	0.371	0.007
Irish	-0.128 (0.20)	-0.055	0.520	0.800 (0.27)	0.360	0.004
Black Caribbean	-0.223 (0.19)	-0.050	0.232	0.540 (0.27)	0.124	0.049
Bangladeshi	-0.496 (0.15)	-0.065	0.001	0.146 (0.23)	0.020	0.533
Indian	-0.100 (0.16)	-0.026	0.531	0.432 (0.21)	0.121	0.039
Age (Ref: 16-34 years)						
35 to 54 years	0.235 (0.20)	0.206	0.251	0.009 (0.24)	0.008	0.970
55 to 74 years	-0.374 (0.34)	-0.367	0.275	-0.010 (0.32)	0.010	0.975
Household Equivalised Income (Ref: Quintile 1)						
Quintile 2	0.013 (0.26)	0.011	0.960	-0.320 (0.32)	-0.314	0.316
Quintile 3	0.130 (0.25)	0.126	0.599	0.080 (0.28)	0.082	0.776
Quintile 4	-0.347 (0.28)	-0.382	0.218	-0.178 (0.31)	-0.206	0.570
Quintile 5 (High)	-0.819 (0.30)	-0.848	0.006	-0.492 (0.48)	-0.534	0.304
Missing	0.045 (0.29)	0.032	0.876	0.141 (0.31)	0.110	0.651
Marital Status (Ref: Married)						
Separated[a]	0.038 (0.28)	0.034	0.892	-0.110 (0.32)	-0.109	0.726
Single	-0.039 (0.28)	-0.033	0.887	-0.108 (0.31)	-0.097	0.729
Employment Status (Ref: Employed)						
Unemployed	-0.783 (0.34)	-0.370	0.022	-0.043 (0.27)	-0.022	0.876
Retired	-0.273 (0.35)	0.299	0.429	-0.155 (0.36)	-0.178	0.665
Economically inactive	-0.039 (0.33)	-0.027	0.905	0.528 (0.30)	0.386	0.082
Looking after home or family	-0.096 (0.25)	-0.065	0.703	0.196 (0.30)	0.138	0.509
Frequent contact with friends	-0.310 (0.17)	-0.258	0.069	0.150 (0.20)	0.131	0.454
Network content (Ref: Spouse and Relative)						
Spouse and Friend	0.983 (0.28)	0.928	<0.001	-0.449 (0.39)	-0.443	0.248
Friend & Relative	0.434 (0.28)	0.383	0.118	-0.286 (0.28)	-0.265	0.310
Relatives	0.531 (0.27)	0.417	0.045	0.046 (0.28)	0.037	0.868
Friends	-0.082 (0.46)	-0.071	0.859	-0.004 (0.60)	-0.006	0.995
0 or 1 close person	0.091 (0.34)	0.082	0.789	-0.382 (0.62)	-0.036	0.537

* Standardised estimates are provided in order to be able to compare the magnitude of effect of one independent variable with another. P values relate to the unstandardised coefficients. P-values are not provided in Mplus for standardised coefficients.
[a] Or Divorced or Widowed

Table 6.6: Direct, Indirect and Total Effects of Social Network variables on Mental Health Service Use (n=2,237)

	Direct Effects On Mental Health Service Use			**Indirect Effects via Mental Illness**			**Total Effects**			**Percent Mediated**
	Unstandardised (SE)	**Standardised**	**P-value**	**Unstandardised (SE)**	**Standardised**	**P-value**	**Unstandardised (SE)**	**Standardised**	**P-value**	**Indirect Effect/ Total Effect**
Inadequate Support	0.089 (0.11)	0.064	0.411	0.176 (0.05)	0.176	<0.001	0.335 (0.10)	0.239	0.001	73
Frequent Contact with Relatives	-0.269 (0.20)	-0.242	0.184	-0.159 (0.08)	-0.144	0.045	-0.428 (0.21)	-0.389	0.041	37
Larger networks (>= 3 people)	0.236 (0.24)	0.205	0.335	-0.215 (0.11)	-0.191	0.039	0.016 (0.27)	0.017	0.952	N/A

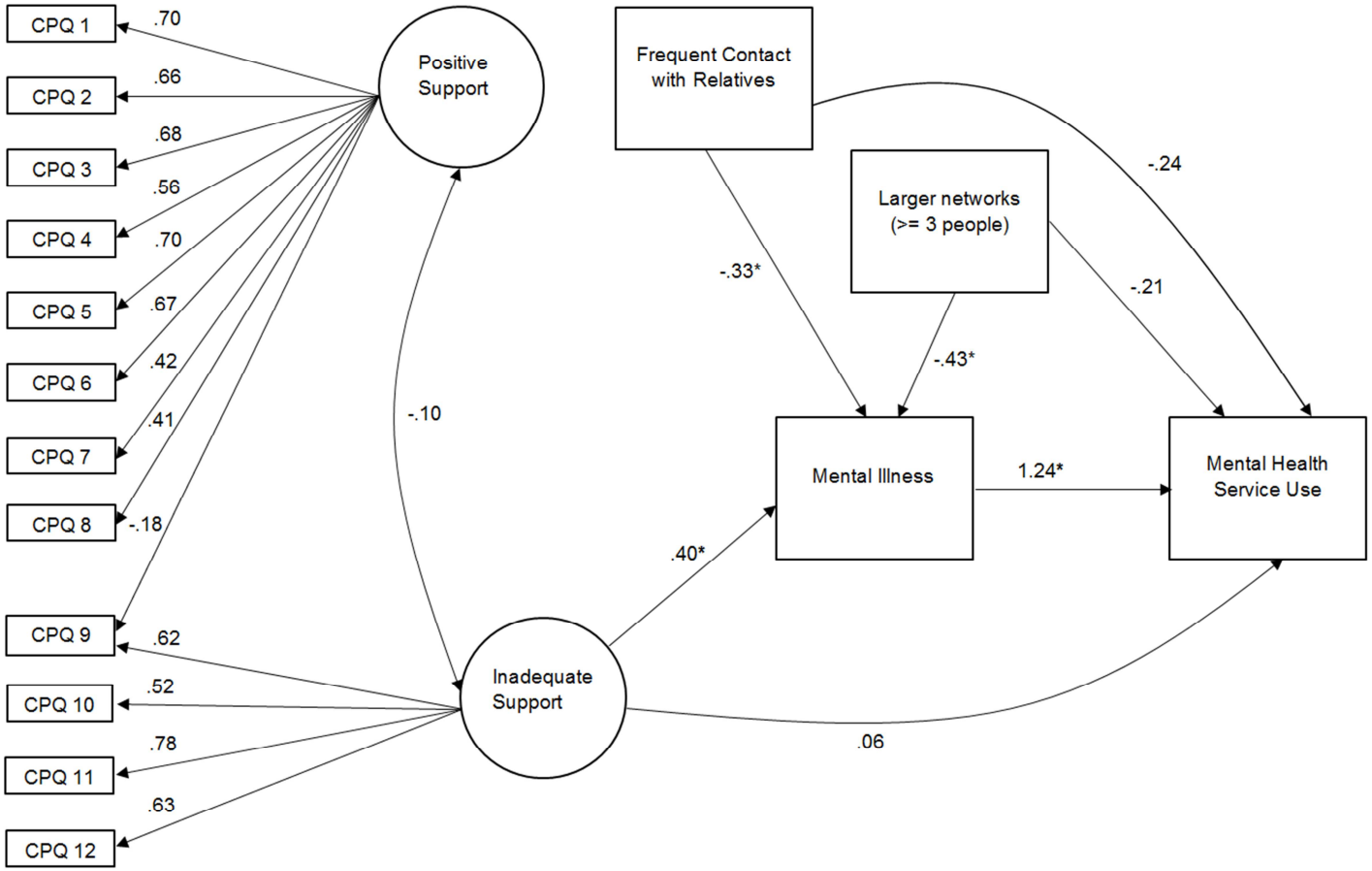

Figure 6.4: Structural Equation Model for the effect of social networks on mental health service use, via the mediator, mental illness.
Statistically significant path coefficients (at 5% level) are marked with an asterisk (*). The model was adjusted for the following control variables: ethnic group, age, household equivalised income, marital status, employment status, frequent contact with friends, and network content.

Ethnic differences between Pakistani women and women of other ethnic groups were evident in this model, after controlling for many variables and positing mental illness as a mediator. White women (β = 0.643, SE = 0.24, p=0.007) were more likely to use services than Pakistani women, as were Irish (β = 0.800, SE = 0.27, p=0.004), Black Caribbean (β = 0.540, SE = 0.27, p=0.0.49), and Indian (β = 0.432, SE = 0.02, p=0.039) women. There were no differences in the mental health service use of Pakistani women, compared with Bangladeshi women (β = 0.146, SE = 0.23, p=0.533). The model also showed that there were no differences between Pakistani women and women of other ethnic groups to have mental illness, except for Bangladeshi women who were less likely to have mental illness (β = -0.496, SE = 0.15, p=0.001).

Table 6.6 shows the direct, indirect and total effects of the three social network variables on mental health service use via the mediator mental illness. Of particular importance in this table are the columns showing indirect effects and percent mediated. The indirect effect is a product of 1) the coefficient of the social network variable from the regression of mental illness on the social network variable and 2) the coefficient of mental illness from the regression of the outcome variable on mental illness. Inadequate support had an indirect positive effect on mental health service use via mental illness (β = 0.176, SE = 0.05, p<0.001). Most of the effect (73%) of inadequate support was via this mediation. Frequent contact with relatives had a negative indirect effect on mental health service use via mental illness (β = -0.159, SE = 0.08, p=0.045). About a third of the total effect (37%) of contact with relatives was via this mediation. Larger networks (3 or more people in the network) had a negative indirect effect on mental health service use via mental illness (β = -0.215, SE = 0.11, p=0.039). It was not possible to calculate the percent of the total effect that was via mediation, as the overall total effect (sum of direct and indirect effects) was close to zero (β = 0.021, SE = 0.27, p=0.938). This was because the

direct effect and indirect effect had effects in the opposite directions; this is known as a suppression effect (Mackinnon, Krull, & Lockwood, 2000).

The RMSEA for the model was 0.019 (CI = 0.017 – 0.021, p>0.999), suggesting a very good fit of the model to the data. However, the CFI was 0.800, and the TLI was 0.764, suggesting that the model was not a good fit to the data. The chi square test of model fit also suggested that the model was not a good fit to the data (chi squared = 693.380, df=386, p<0.001). Hence, the model fit statistics did not provide a clear answer as to the good fit of the model.

6.4.3. Does the mediation effect differ for Pakistani women, compared with women of other ethnic groups?

From the mediation model, it was seen that the effects of all three aspects of social networks (inadequacy of support, frequent contact with relatives, and size of network) on mental health service use, were mediated by mental illness. Hence, all three aspects were tested to see if their effects were moderated by ethnic group. The results from the moderated mediation model are shown in Tables 6.7 and 6.8. The estimated loadings from the CFA within the model are shown in Appendix 6.4.

Table 6.7: The moderating effect of ethnicity on the effect of inadequate support, contact with relatives and larger networks on mental health service use, via mental illness (moderated mediation model).
Values are unstandardised probit coefficients (standard errors) (n=2,237)

	Mental Illness		Mental Health Service Use	
	Unstandardised Coefficient (SE)	**P-value**	**Unstandardised Coefficient (SE)**	**P-value**
Inadequate Support	0.163 (0.13)	0.224	0.167 (0.11)	0.121
Frequent Contact with Relatives	-0.107 (0.19)	0.564	-0.343 (0.17)	0.039
Larger networks (>= 3 people)	0.029 (0.24)	0.905	0.139 (0.26)	0.587
Ethnic Group (Ref. Pakistani)				
White	0.392 (0.34)	0.243	0.599 (0.26)	0.023
Irish	-0.256 (0.38)	0.501	0.880 (0.27)	0.001
Black Caribbean	-0.489 (0.36)	0.170	0.536 (0.26)	0.040
Bangladeshi	-0.677 (0.35)	0.050	0.213 (0.26)	0.405
Indian	-0.085 (0.30)	0.777	0.618 (0.25)	0.013
*Inadequate Support*Ethnic Group*				
White*Inadequate support	0.286 (0.17)	0.083		
Irish*Inadequate support	0.257 (0.19)	0.183		
Black Caribbean*Inadequate support	0.046 (0.16)	0.771		
Bangladeshi*Inadequate support	0.238 (0.21)	0.249		
Indian*Inadequate support	0.133 (0.20)	0.497		
*Frequent Contact with Relatives*Ethnic Group*				
White*Frequent Contact	-0.234 (0.25)	0.350		
Irish*Frequent Contact	-0.052 (0.29)	0.855		
Black Caribbean*Frequent Contact	0.175 (0.26)	0.499		
Bangladeshi*Frequent Contact	-0.026 (0.31)	0.933		
Indian*Frequent Contact	0.492 (0.30)	0.100		
*Larger Networks*Ethnic Group*				
White*Larger networks	-0.646 (0.29)	0.026		
Irish*Larger networks	-0.042 (0.37)	0.908		
Black Caribbean*Larger networks	0.153 (0.35)	0.659		
Bangladeshi*Larger networks	-0.050 (0.34)	0.884		
Indian*Larger networks	-0.327 (0.30)	0.288		
Mental Illness (Ref: Low CIS-R)				
CIS-R Score >=12			0.841 (0.26)	0.001
*Mental Illness*Ethnic Group*				
White*Mental Illness			0.158 (0.34)	0.645
Irish*Mental Illness			-0.210 (0.35)	0.554
Black Caribbean*Mental Illness			0.076 (0.34)	0.825
Bangladeshi*Mental Illness			-0.850 (0.47)	0.068
Indian*Mental Illness			-0.328 (0.38)	0.393
Age (Ref: 16-34 years)				
35 to 54 years	0.229 (0.23)	0.313	0.024 (0.23)	0.920
55 to 74 years	-0.499 (0.31)	0.102	-0.161 (0.39)	0.678
Household Equivalised Income (Ref: Quintile 1)				
Quintile 2	0.403 (0.25)	0.111	-0.167 (0.29)	0.568
Quintile 3	0.433 (0.26)	0.094	0.254 (0.28)	0.357
Quintile 4	-0.056 (0.28)	0.840	-0.070 (0.27)	0.796
Quintile 5 (High)	-0.653 (0.32)	0.041	-0.551 (0.36)	0.127
Missing	0.299 (0.32)	0.358	0.317 (0.32)	0.317
Marital Status (Ref: Married)				
Separated/ Divorced/ Widowed	0.153 (0.28)	0.580	-0.034 (0.32)	0.915
Single	-0.146 (0.31)	0.637	-0.144 (0.37)	0.699
Employment Status (Ref: Employed)				
Unemployed	-0.841 (0.31)	0.006	-0.296 (0.30)	0.331
Retired	-0.121 (0.32)	0.707	-0.065 (0.39)	0.868
Economically inactive	0.047 (0.34)	0.891	0.592 (0.31)	0.056
Looking after home or family	-0.006 (0.24)	0.982	0.239 (0.24)	0.322
Frequent contact with friends	-0.357 (0.17)	0.031	0.111 (0.18)	0.541
Network content (Ref: Spouse and Relative)				
Spouse and Friend	0.928 (0.29)	0.001	-0.431 (0.32)	0.175
Friend & Relative	0.637 (0.29)	0.026	-0.258 (0.36)	0.473
Relatives	0.735 (0.28)	0.008	0.162 (0.34)	0.633
Friends	0.026 (0.61)	0.966	-0.054 (0.52)	0.917
0 or 1 close person	0.153 (0.35)	0.664	-0.562 (0.43)	0.194

Table 6.8: The indirect effects of inadequate support, frequent contact with relatives and larger networks on mental health service use, for Pakistani women, compared with women of other ethnic groups (n=2,237)

	Social Network Indirect Effects on Mental Health Service Use											
	Inadequate Support				**Frequent Contact with Relatives**				**Larger networks (3 or more people)**			
Ethnic group	Indirect Effect (SE)	P value of indirect effect	Difference in Indirect Effect compared with Pakistani women (SE)	P value of Difference	Indirect Effect (SE)	P value of indirect effect	Difference in Indirect Effect compared with Pakistani women (SE)	P value of Difference	Indirect Effect (SE)	P value of indirect effect	Difference in Indirect Effect compared with Pakistani women (SE)	P value of Difference
Pakistani	0.137 (0.12)	0.243	-	-	-0.090 (0.16)	0.561	-	-	0.024 (0.20)	0.985	-	-
White	0.448 (0.16)	0.004	-0.311 (0.18)	0.078	-0.341 (0.20)	0.088	0.251 (0.24)	0.304	-0.617 (0.30)	0.039	0.641 (0.31)	0.036
Irish	0.265 (0.15)	0.068	-0.128 (0.17)	0.458	-0.100 (0.15)	0.501	0.010 (0.21)	0.961	-0.008 (0.20)	0.966	0.033 (0.26)	0.901
Black Caribbean	0.191 (0.11)	0.085	-0.054 (0.15)	0.708	0.062 (0.17)	0.714	-0.152 (0.23)	0.501	0.167 (0.25)	0.512	-0.142 (0.31)	0.644
Bangladeshi	-0.004 (0.16)	0.981	0.141 (0.20)	0.478	0.001 (0.05)	0.981	-0.091 (0.16)	0.577	<0.001 (0.01)	0.980	0.024 (0.20)	0.906
Indian	0.152 (0.11)	0.176	-0.015 (0.16)	0.925	0.198 (0.17)	0.237	-0.288 (0.23)	0.207	-0.153 (0.17)	0.355	0.177 (0.23)	0.442

The model showed that there were no differences in the effect of inadequate support on mental illness between Pakistani women and women of other ethnic groups (see Table 6.7); none of the interaction terms were significant at the 5% level. However, there was a suggestion that for White women (β[1] = 0.286, SE = 0.17, p=0.083), inadequate support may have a greater effect on mental illness than for Pakistani women, although these coefficients were not statistically significant at the 5% level. The effect of frequent contact with relatives on mental illness did not differ for women of different ethnic groups, compared with Pakistani women. The effect of having a larger network (3 or more people in the network) also did not differ between Pakistani women and women of other ethnic groups, except for White women who were less likely to have mental illness if they had larger networks (β = -0.646, SE = 0.29, p=0.026), compared with Pakistani women with larger networks.

The influence of mental illness on mental health service did not differ between Pakistani and White, Irish, Black Caribbean and Indian women. There was some evidence to suggest that for Bangladeshi women (β = -0.850, SE = 0.47, p=0.068) the effect of mental illness on mental health services was less than for Pakistani women, but this was not statistically significant at the 5% level.

In order to ascertain if the mediation of the three aspects of social networks differed between Pakistani women and women of other ethnic groups, indirect effects and the differences in these between Pakistani women and women of other ethnic groups were calculated (see Table 6.8). First, for Pakistani women, the indirect effect of inadequate support on mental health service was not statistically significant but it was for White women (β = 0.448, SE = 0.16, p=0.004). However, when the difference was tested, the model showed that there was statistically no difference in the mediation effects between Pakistani women and women of other ethnic groups, although there was a suggestion that

[1] Unstandardised probit coefficient.

the mediation effect for White women was greater than for Pakistani women (β (difference) = -0.278, SE = 0.15, p=0.066). Second, there was not any evidence to suggest that the effect of frequent contact with relatives on mental health service use was mediated in women of any ethnic group, and there were not any differences between Pakistani women and women of other ethnic groups. Finally, for Pakistani women there was no indirect effect of having larger networks (3 or more people) on mental health service use. An indirect effect was evident only for White women (β = -0.467, SE=0.22, p=0.032), and the difference between Pakistani women and White women was statistically significant at the 5% level (β = 0.641, SE = 0.31, p=0.036).

Overall, the model suggested that there were some differences in the indirect effects of social networks on mental health service use mainly between Pakistani and White women, but most of these were not statistically significant. This suggests that the indirect effects of inadequate support, frequent contact with relatives were not moderated by ethnic group. There was some evidence that the indirect effects of larger networks on mental health service use was moderated by ethnic group, shown by the difference between Pakistani women and White women.

Model fit statistics (such as the RMSEA, CFI and TLI) were not available for the moderated mediation model because maximum likelihood estimation was used, and hence they cannot be reported here. As the interaction terms were not significant, this suggests that this model is a worse fit to the data than the mediation model from the previous section (6.4.2)

Although the model showed minimal evidence that indirect effects of social networks were moderated by ethnic group, a caveat must be issued in relation to the reliability of these results due to the method used to calculate indirect effects. The model used a binary mediator, a binary outcome and MLR estimation. This estimation method is the only one available when using the command XWITH, which was necessary for

creating interaction terms between inadequate support and ethnic group. When using MLR estimation, the indirect effects may not be accurately calculated as a product of paths ***a*** and ***b*** (Muthen & Asparouhov, 2015). This is because one of the assumptions of MLR estimation is that the relationships between the mediator and X variable, and the outcome and mediator are linear. Consideration was given to an alternative method based on the counterfactual framework (Imai, Keele, & Tingley, 2010) of calculating indirect effects, which has recently become available in Mplus (Muthen & Asparouhov, 2015). This method is based on testing the difference between mean outcomes of people in each category of the mediator, and can be used with a binary mediator and binary outcome to estimate indirect effects for a moderated mediation model. However, it is not available when the XWITH command has been used to create interactions between a latent variable and an observed variable (Muthen, 2015a). If this type of model was available, and had been used, the indirect effect estimates would have been more robust, with less error.

6.5. Discussion

6.5.1. Main Findings

This study aimed to answer two research questions. The first asked if the influence of social networks on mental health service use was mediated by mental illness for women in England. By using a structural equation model consisting of a confirmatory factor analysis and a mediation model, the analysis showed that three aspects of social networks (inadequate support, frequent contact with relatives, and having a larger network) exerted their influence on mental health service use indirectly via mental illness. Women who perceived a greater amount of inadequate support in networks were more likely to have mental illness, and mental illness was a significant predictor of mental health service use. There was a positive indirect effect of inadequate support on mental health service use, and this constituted over three quarters of the overall effect of inadequate support on mental

health service use. Women who had frequent contact with their relatives (as opposed to none, or no relatives) were less likely to have mental illness. There was a negative indirect effect of frequent contact with relatives on mental health service use, and this constituted about a third of the overall effect of frequent contact with relatives on mental health service use. Women with networks consisting of three or more people were less likely to have mental illness. There was a negative indirect effect of having a larger network on mental health service use.

The second research question asked if the mediation effects found from the first model were different for Pakistani women, compared with women of other ethnic groups. By using a moderated mediation analysis, the study found some evidence to suggest that the indirect effects of inadequate support, frequent contact with relatives and larger networks were not present for Pakistani women and other ethnic minority women but they were present for White women. The differences between Pakistani and White women were statistically significant for the indirect effect of larger networks on mental health service use, with larger networks less likely to increase mental health service use for White women, compared with Pakistani women.

6.5.2. Comparison with other studies

There have not been any studies in the UK that have investigated the indirect effect of social networks on mental health service use for women of different ethnic groups. Hence, this study presents a novel contribution in the England context. Internationally, only two other empirical studies (Golding & Wells, 1990; Villatoro & Aneshensel, 2014) within the adult population (to the author's knowledge) have been undertaken attempting to explain the effects of aspects of social networks on mental health service use, using the mechanism of indirect effects via mental illness. The study provides evidence for one of the mechanisms proposed by Gourash (1978), that is, social networks buffer the experience of stress which reduces the need for help. However, this mediation effect was only

apparent for inadequate support and larger networks, for White women, not Pakistani women and other ethnic minority women. This suggests that social networks may not operate in the same way for all women. Larger networks for White women reduced the propensity for mental illness, reducing the need for services. However, large networks for Pakistani women did not reduce levels of mental illness, and did not reduce mental health service use. Indeed, the analysis in Chapter 5 showed that for Pakistani women, larger networks (directly) increased the use of mental health services. There may be two possible reasons for this; it may be that Pakistani women with larger networks are more likely to receive advice from their network to seek mental health services, compared with other women. However, this seems unlikely as the systematic review in this thesis showed that studies that have been undertaken with Pakistani women tend to show that Pakistani women as unlikely to seek support for mental health problems from their close social networks (Chew-Graham et al., 2002; Cinnirella & Loewenthal, 1999). The other possibility is that larger networks for Pakistani women present more stress than for White women, however comparative empirical evidence for this is scant.

The findings of the present study are inconsistent with Golding and Wells' study (1990). By undertaking a survey analysis of three different adult ethnic groups in Los Angeles in the US, they found that there were no indirect effects of social support on formal mental health service use. Although they found that greater support from relatives was associated with increased formal mental health service use (as did the present study), they concluded that indirect effects were not present because when the level of psychiatric disorder was added to regression models, the association between greater support from relatives and mental health service use did not reduce. They did not use a mediation model (as in the present study) to calculate indirect effects of social support on mental health service use. Since the present study used a more appropriate method to ascertain the presence of indirect effects, the findings of this study are more robust. The findings of this

study also corroborate Villatoro & Aneshensel's study (2014). Using the National Survey for American Life (NSAL), they found that for African American adults, negative interactions with family had an indirect positive effect on mental health service use, via mental illness, although there was not a direct effect of negative interactions on mental health service use.

The findings of this study also corroborate those of two studies that were carried out with youth populations. The first, Martinez and Lau's (2011) study, found negative indirect effects of parent's perceived support on children's mental health service use, using a nationally (US) representative survey of parents of youth in child welfare. The second undertaken by Lindsey and colleagues (Lindsey et al., 2012) also found that lower network support in caregivers led to higher use of child mental health services, via caregiver mental illness, in a large study of African American and Caucasian children and caregivers conducted in the US. Of course the findings of the present study are not directly comparable to these two child studies. However, the general principle of different aspects of social support operating in a way to reduce or increase mental health service use, because they reduce or increase mental illness, is similar.

None of the previous studies mentioned in this section tested if the indirect effect of social support on mental health service differed between ethnic groups, despite using large ethnically diverse samples to enable this type of analysis (Golding and Wells: US-born Mexican Americans, Mexican-born Mexican Americans, and US-born non-Hispanic Whites; Villatoro and Aneshensel: African Americans, American Afro-Caribbeans, and non-Hispanic Whites; Martinez and Lau: African Americans, Latinos and, non-Hispanic Whites; Lindsey and colleagues: African Americans, and Caucasians). By extending the mediation analysis to a moderated mediation analysis, this study found modest differences in the mediated effect of larger networks on mental health service use by ethnic group, adding novel findings to this field.

Overall, this study showed that although indirect effects of social networks are in operation via mental illness to influence mental health service use, they do not explain ethnic differences in the use of mental health services for women in the UK.

6.5.3. Strengths and Limitations

This is the first study in the UK to investigate the indirect effects of social networks on mental illness, and also the first to study ethnic differences in these effects. This was done using a nationally representative sample in England, thereby allowing the findings to be generalised to the population of women in England. The study showed evidence of mediation of social networks' effects on mental health service use, via mental illness. This should be considered by other researchers investigating the effects of people's close social networks on mental health service care outcomes. Other studies that have not factored this in, may have overestimated the direct influence of aspects of social networks on mental health service use.

There are a number of limitations to the study that must be acknowledged. The study used cross-sectional data and hence strong causal claims about the influence of social networks on mental health service use cannot be made using the findings from this study. This study considered using data from The Health Surveys for England (HSEs) 1998 and 1999, but the data were not used due to the limited nature of the social support questions, and the difference in timing of measurements for White (1998) and ethnic minority (1999) women. It is also possible that higher levels of mental illness found for Pakistani women, compared with many other ethnic groups, may be a result of not accessing services.

As mentioned earlier (section 6.4.3), the findings relating to the difference in indirect effects between Pakistani women and White women must be viewed as tentative, due to the inadequacy of estimation methods in Mplus for mediation analyses that use binary mediators, binary outcomes, and MLR estimation. It is likely that the appropriate

estimation method will become available in future releases for Mplus. Hence this analysis could be re-done to check the validity of the findings, when this functionality becomes available. One other way to test for the differences in indirect effects between ethnic groups is to use a multigroup model within the framework of structural equation modelling. This type of model could be used to estimate the measurement part of the model (CFA) separately for all ethnic groups for the items measuring social support. The CFA solution can then be tested for measurement invariance i.e. no difference in the measurement of social support between ethnic groups. If measurement invariance does not hold, separate mediation models can be fitted for each ethnic group to test the effects of social support on mental health service use. Future research could use this type of model with the EMPIRIC data to ascertain the differences in the way social support is measured across ethnic groups. There is relatively little information on the validity of social support questionnaires for different ethnic groups, although one recent study by Wong and colleagues (Wong, Nordstokke, Grogorich, & Perez-Stable, 2010) in San Francisco found that there was no difference in the measurement of social support between women of four different ethnic groups.

It is also important to note that the structural equation modelling framework was used to test one possible model, based on a mechanism found in the literature (Gourash, 1978). However, there are other ways in which the structural equation model could have been specified, providing evidence for other potential mechanisms for the way in which social networks operate, especially if longitudinal data were available.

6.5.4. Conclusions and Implications

The effects of social networks (inadequate support, frequent contact with relatives and having larger networks) on mental health service use were not mediated by mental illness for Pakistani women, but there was some evidence to suggest that they were for White women. This study also showed that by accounting for the effects of some aspects of

social networks, the under-use of outpatient mental health services by Pakistani women, compared with women of some other ethnic groups, could not be explained.

In order to go some way in explaining and redressing these ethnic differences, the treatment of Pakistani women in primary care and other mental health services should be interrogated more thoroughly, with research assessing the quality of care received, levels of perceived discrimination in patient-doctor interactions, and analysis of referral pathways into mental health services. Each of these suggestions for future research presents a challenge to researchers in the field of ethnic inequalities in health service use in the UK, since the lack of importance attached to monitoring and tackling racial discrimination in mental health services by the Department of Health (Fitzpatrick, Kumar, Nkansa-Dwamena, & Thornel, 2014), may influence the quality of the NHS administrative data that are available to academic researchers for analysis. This point is elaborated upon further in the next chapter, which states the overall conclusion of the thesis.

Chapter 7: Conclusion

This thesis aimed to investigate a particular public health concern in England: Pakistani women's high levels of mental illness, alongside low levels of mental health service use. This was done by investigating whether the nature of Pakistani women's social networks could explain their low levels of service use, given tentative evidence from previous studies that low levels of social support and high levels of social isolation experienced by these women may reduce their likelihood of coming into contact with mental health services. The exact rates of mental health service use for Pakistani women had not been estimated before in England, taking into account important predictors of mental health service use, such as mental illness and socioeconomic status. Nor had the association between aspects of social networks and mental health services been investigated in England as a potential explanation for ethnic differences in women's mental health service use. Hence, this thesis filled important gaps in knowledge. The work was carried out using a systematic review of existing literature, and statistical modelling of two large nationally representative datasets.

The principal findings from this study were: Pakistani women were the least likely to have used outpatient mental health services, compared with women of all other ethnic groups, except Bangladeshi women; Pakistani women were less supported in their social networks than White British women but there were largely no differences in social support between Pakistani women and other ethnic minority women; larger networks were less likely to indirectly increase mental health service use for White women, compared with Pakistani women, but these differences did not explain Pakistani women's under-use of mental health services. The next section highlights this thesis' contribution to scholarly knowledge.

7.1. Contribution to Knowledge

This thesis contributes to scholarly knowledge in three main areas: ethnic inequalities in mental health service use, the nature of Pakistani women's social networks, and the role of social networks in mental health care outcomes. With respect to the first area, this thesis found lower outpatient mental health service use for Pakistani women compared with Indian women, as well as White, Irish and Black Caribbean women, but not Bangladeshi women. The finding that Pakistani women have lower use of mental health services than Indian women is a novel, and important finding. It shows that it is not appropriate to think of, analyse, and make statements about Indian and Pakistani women as one group under the umbrella of 'South Asian women'.

Almost all other previous quantitative studies reporting on ethnic differences in mental health service use in the UK with community and clinical samples have either combined Pakistani, Indian and Bangladeshi women into one group (South Asian) when conducting analyses (C. Cooper et al., 2013; J. Cooper et al., 2010), have not adjusted for women's level of mental illness (Bajekal, 2001; Lloyd & Fuller, 2002) or have not considered other important explanatory factors (Glover & Evison, 2009) such as employment status, which was shown to be influential in this thesis, and in another large community study in England (Bebbington et al., 2003). The analysis within this thesis reported findings separately for each distinctly measured ethnic group, adjusted for mental illness, and a large number of potential confounding variables, utilising a large nationally representative dataset. Hence this thesis established women's outpatient mental health service use rates with a greater degree of accuracy, than has been done in previous studies. Further these findings can be generalised to the population of England due to the sampling strategy employed for the dataset used (EMPIRIC).

With respect to Pakistani women's social networks, this thesis found that Pakistani women have lower levels of social support than White British and White Irish women, but

there were not great differences between Pakistani, and Indian, Bangladeshi, Black Caribbean and Black African women. Hence findings from previous research, conducted in Manchester, that have implied that Pakistani women are particularly socially isolated (Chaudhry et al., 2012, 2009; Gask et al., 2011; Gater et al., 2009, 2010), are not supported by this thesis. It is important to point out that the findings in relation to the nature of Pakistani women's social networks in this thesis were ascertained using the UK's largest nationally representative household survey, making these findings more reliable and generalisable to the population of the UK; this is not the case for the small localised studies of Pakistani women that have been conducted in Manchester.

This thesis is the first contribution to the field of social network influences on outpatient mental health service use for women using English data. It was found that Pakistani women with larger networks had increased odds of using mental health services; this was not found for women of any other ethnic group. This finding is somewhat unexpected, since this has not been found in any other study in the UK or internationally. In fact, most previous studies have found that larger networks decrease the use of psychiatric outpatient services (Albizu-Garcia et al., 2001; Pescosolido, Wright, et al., 1998; Sherbourne, 1988; Woodward et al., 2008), and inpatient services (Albert et al., 1998; Becker et al., 1997). One possible reason for the finding is the high likelihood of Pakistani women to live in multiple-generation households, compared with other ethnic groups (Berthoud & Beishon, 1997) coupled with the high propensity for them to be looking after the home or family (Kapadia, Nazroo, et al., 2015), which could lead to high levels of mental distress (Sonuga-Barke & Mistry, 2000) and an increase in mental health service use. There is some evidence to suggest that large networks with such a composition might not be particularly supportive (Dressler, 1985; Furnham & Shiekh, 1993). However, Bangladeshi women also have high levels of living in extended families and this finding was not apparent for them.

More generally, in line with studies from outside the UK, this thesis found inadequate support in women's networks was associated with increased outpatient mental health service use (Golding & Wells, 1990; Maulik et al., 2009; Pescosolido, Wright, et al., 1998; Ten Have et al., 2002; Thoits, 2011; Woodward et al., 2008). This thesis also showed that women with more frequent contact with relatives were less likely to have used outpatient mental health services, consistent with other studies from outside of the UK (Kouzis et al., 2000; Sherbourne, 1988). Further, this thesis provided evidence to support one of Gourash's (1978) theoretical mechanisms: the way social networks operate to influence mental health service use, by impacting on mental illness. This is an important contribution to the field, adding to the work of Villatoro and Aneshensel (2014) who found the same association for African Americans in the US. By showing that social support, size of network, and contact with relatives impact on mental illness, which in turn impacted on mental health service use, this thesis highlights the need for other researchers in this field to consider this potential pathway in future studies in order to ensure the direct effects of social networks on mental health service use are not overestimated.

Most importantly, this study showed that ethnic differences in women's use of mental health services were not explained by differences in the nature of their social networks (as measured in the survey used for this thesis), nor by any of the other explanatory variables used in statistical analyses. This is an important contribution to scholarly knowledge, as it suggests that further research into why Pakistani women's rates of mental health service use are lower than most other ethnic groups must explore other potential reasons. These are expanded upon in section 7.4. The next section provides more details of the findings of the study, and how these were obtained.

7.2. Summary of Findings

The work undertaken for this thesis was broken down into four specific aims. The four studies in Chapters 3 to 6 were designed to answer the specific aims of the thesis. The findings relating to each aim are summarised here. The first aim was to investigate the rates of mental health service use for Pakistani women, compared with women of other ethnic groups in England. From the systematic review in Chapter 3 it was found that usage of mental health inpatient services in recent years was lower for Pakistani women than for White British, White Irish, Black Caribbean, and Black African women. Pakistani women also had lower usage of mental health outpatient services than White British, Black Caribbean and Black African women. GP consultations for mental health problems were found to be lower for Pakistani women than White women. There were not any differences in usage (inpatient, outpatient, or GP consultation) between Pakistani, and Bangladeshi or Indian women.

The empirical work undertaken in Chapter 5, using the EMPIRIC dataset, found that Pakistani women were less likely to have used mental health services than all other ethnic groups (except for Bangladeshi women). This corroborated to a large extent what was found in the thesis' systematic review, except the secondary data analysis found that Pakistani women were less likely to use mental health services than Indian women. This was because the empirical work, unlike many of the studies synthesised for the systematic review, adjusted the analysis for levels of mental illness. It was also found that Pakistani women born outside of the UK were less likely than those born in the UK to have used mental health services. This finding was not evident for Bangladeshi, Indian, Black Caribbean or White Irish women.

The second aim of this thesis was to investigate the nature of UK Pakistani women's social support networks and how they compared with women of other ethnic groups. From the systematic review in Chapter 3, it was found that in comparison to White

women, Pakistani women were more likely to have contact with a greater number of relatives, but there were no differences between Pakistani women and other ethnic minority women in this. Pakistani women were less likely to have contact with friends than White, White Irish and Black Caribbean women; there were no differences between Pakistani, Indian and Bangladeshi women. Pakistani women were more likely to report severe lack of social support in their networks, compared with women in the general population and Irish women. There was no difference between Pakistani women and Indian, Bangladeshi and Chinese women. Pakistani women were more likely to report negativity from close persons in the network, compared with White women but less likely to than Bangladeshi women; there were no differences between Pakistani women and Indian, Black Caribbean and Irish women.

In Chapter 4, the empirical work undertaken using Wave 2 of the Understanding Society dataset found that four classes of social support networks were evident in the data. These were well supported, single and supported, inadequately supported, and socially isolated. White British women were less likely than Pakistani women to be in the socially isolated or inadequately supported classes, but there was no difference in the risk of being in the single and supported class between the two groups. White Irish women were less likely to be socially isolated than Pakistani women but no more or less likely to be inadequately supported or single and supported. Black Caribbean and Black African women were more likely to be in the single and supported class, compared with Pakistani women, but there were no differences in the risks of being inadequately supported or socially isolated between these groups and Pakistani women. There were no differences in the social support networks of Indian and Bangladeshi women, compared with Pakistani women.

The third aim of this thesis was to investigate if social networks were associated with mental health service use and if this association was the same for Pakistani women,

compared with women of other ethnic groups. In Chapter 3, the systematic review indicated that social networks may impact upon mental health care pathways. The studies reviewed showed that Pakistani women felt they had to cope alone with mental illness, due to the negative stigmatising attitudes towards mental illness in their close networks, particularly from family. Further, women were deterred from accessing services due to the fear that professionals of the same ethnic group would disclose information to people that women knew. The review highlighted the possibility that the level of stigma felt by Pakistani women may act as a greater deterrent to accessing services than for women of other ethnic groups. However, the levels of stigma by ethnic group could not be investigated in this review, because none of the papers commenting on stigma compared Pakistani women's experience with that of women in other ethnic groups.

In Chapter 5, the results of data analyses with the EMPIRIC dataset showed that two aspects of social networks were associated with mental health service use. Frequent face to face contact with relatives was found to reduce the odds of using mental health services, and women who perceived higher levels of inadequate support were more likely to use services. Through the addition of interactions terms in models, it was found that these associations did not vary between women of different ethnic groups. There was no association between the other aspects of social networks (frequent contact with friends, network content and size of network) and use of mental health services. However, when models stratified by ethnic group were used, it was apparent that social network associations with mental health service use may not be the same across ethnic groups. For Pakistani women, large networks were associated with increased odds of using mental health services; this was not found for women of any other ethnic group. Further, the association between inadequate support and service use found in models incorporating all women was only found for White and White Irish women in stratified models. Social

network characteristics did not account for the ethnic differences in women's mental health service use.

The final aim of this thesis was to investigate if mental illness mediated the relationship between social networks and mental health service use and if this mediation was the same for Pakistani women as for women of other ethnic groups. In Chapter 6, by using a structural equation model with the EMPIRIC dataset, the analysis showed that three aspects of social networks (inadequate support, frequent contact with relatives, and having a larger network) exerted their influence on mental health service use indirectly via mental illness. Women who perceived a greater amount of inadequate support in networks were more likely to have mental illness, which increased their mental health service use. Women who had frequent contact with their relatives (as opposed to no contact, or no relatives) were less likely to have mental illness, which decreased their mental health service use. Women with networks consisting of three or more people were less likely to have mental illness, which decreased their mental health service use. Further, by using a moderated mediation analysis, this thesis found some evidence to suggest that the indirect effects of inadequate support, frequent contact with relatives and larger networks were not present for Pakistani women and other ethnic minority women but were only present for White women. The differences between Pakistani and White women were statistically significant for the indirect effect of larger networks on mental health service use, with larger networks less likely to increase mental health service use for White women, compared with Pakistani women.

It is important to note that there were some differences in the effects of social networks on mental health service use for Pakistani women compared with women from other ethnic groups, both within the analyses undertaken for Chapter 5 and between the analyses undertaken for Chapters 5 and 6. With the use of stratified models in Chapter 5, it was apparent that the direct effects of social networks on mental health service use were

not the same for women in each ethnic group. Specifically, large networks increased mental health service use for Pakistani women only, inadequate support increased service use for White British and Irish women, and frequent contact with relatives reduced service use for Bangladeshi women. However, when models with interaction terms were used in order to test if the effect of social networks were statistically different between Pakistani women and women of other ethnic groups, no differences were found. Therefore, although the analyses in Chapter 5 found that there were differences in mental health service use between Pakistani women and White, Irish, Black Caribbean and Indian women, there were not any ethnic differences in the association between social networks and mental health service use.

The conclusions that could be drawn from the analyses in Chapter 6 were slightly different. Overall, as for the analyses in Chapter 5, Pakistani women were less likely to have used mental health services than White, Irish, Black Caribbean and Indian women, and these ethnic differences remained in final models. For the main part, there were no ethnic differences in the indirect effects (via mental illness) of social networks on mental health service use. However, one ethnic difference was apparent: large networks reduced mental health service use, indirectly via mental illness, for White women to a greater extent than for Pakistani women. This ethnic difference was not found in the direct effects in the analyses in Chapter 5, although the stratified model for the Pakistani group showed that women with larger networks were more likely to have used mental health services compared with women with smaller networks. Therefore, Chapter 6 showed ethnic differences in the *indirect* effects of large networks on mental health service use but Chapter 5 did not show ethnic differences in the *direct* effects of large networks on mental health service use. This suggests that it is important to consider both direct and indirect effects of social networks when investigating ethnic differences in mental health service

use, in order to provide a full picture of how social networks influence mental health service use for women in different ethnic groups.

7.3. Strengths and Limitations

The work undertaken for this thesis was carried out using statistical modelling appropriate for the empirical research questions that were addressed. Each of the statistical models took into consideration women's level of mental illness and many other influential socioeconomic characteristics, which have been omitted from many other studies that consequently potentially underestimated ethnic differences in women's mental health service use. In addition, this thesis used a structural equation model to assess the indirect effects of social networks on mental health service use. This is the most appropriate statistical technique to assess mediation effects. Therefore this thesis adds methodologically robust findings to this field.

There were three broad limitations to the empirical work undertaken for this thesis. The first was that the analyses were based on cross-sectional data, and therefore the thesis could not make strong causal claims about the effect of social networks on mental health service use.

The second limitation was the different ways in which social networks and social support were operationalised in Chapters 4, 5 and 6. In Chapter 4, the construct of social support networks was used, defined as a summary of the positive and negative aspects of support in a network from partners, relatives and friends. In Chapter 5, four aspects of social networks were used: social support (the highest positive and highest inadequate support from the two closest people), frequent contact with relatives and friends, two closest people in the network, and network size. In Chapter 6, a smaller subset of network characteristics from Chapter 5 were used (highest inadequate support, frequent contact with relatives and network size). These differences in use reflect a more general problem with inconsistency across surveys (and countries) in the way in which social support is

measured and which aspects of social networks are deemed important to include on a survey (Barrera, 1986; Thoits, 1982). Although the operationalisation of aspects of social support was different across chapters in this thesis, and different from the way in which social support has been operationalised in other studies, it is encouraging that the findings of this study were largely consistent with other major studies in this field.

The final limitation of this thesis relates to the use of Pakistani women as the reference group in the statistical analyses. Most research within the field of ethnic inequalities in health uses the White ethnic group as the reference category in statistical models. This is done in order to compare estimates for ethnic minority groups, who are usually hypothesised to be disadvantaged, compared with the White majority population. This thesis, from the outset, identified that there may be a particular disadvantage evident for Pakistani women in the use of mental health services, hence all of the other groups were compared with them in order to be able to make statements about Pakistani women's mental health service use. However, a potential consequence of using Pakistani women as the reference category is that these women can become racialised (more so than they already are), in that problems that are evident for Pakistani women can be interpreted as being the case *because* women are Pakistani, and not due to the disadvantages they face (Nazroo, 1998, 1999). Care was taken to write about Pakistani women in a way that situated the problems that may be occurring within wider narratives of societal and medical structures. It is hoped that the way that this thesis was written does not perpetuate any stereotypes of Pakistani women, and indeed it was the author's intention to do the opposite: dispel myths about this group using robustly produced research findings.

7.4. Future Research

There are some ways in which the findings of this thesis could be extended upon with the release of new data from existing UK surveys, and the collection of more data on

factors that may help to further understand ethnic inequalities in women's mental health service use and how social networks operate to impact upon mental health service use.

This thesis used data from the EMPIRIC survey to investigate the relationship between social networks and mental health service use. This was the only dataset in the UK that allowed investigation of the association between ethnicity, mental illness, social networks and mental health service use. One other large survey in the UK, Understanding Society allowed for analysis of the relationships between ethnicity, mental illness and social networks, but Understanding Society does not contain data on mental health service use. However, consent has been obtained from a large proportion of participants in the Understanding Society sample (67%, Baghal, Knies, & Burton, 2014) to link their data from the survey with NHS health records, which will allow this survey to be used in future investigations of both social network influences on, and ethnic differences in, mental health service use. However, it is important to note that the consent rate for health data linkage for all ethnic minority participants (55%) was lower than for White British participants (70%). Hence, the levels of missingness (leading to potential bias) in these data for ethnic minority participants may be particularly high, which could limit the usefulness of these data.

The date by which the survey data will be linked to health records, and released for use by academic researchers, has not yet been decided, nor have the exact details of the health service use data that will become available, been specified (Understanding Society, 2015). The Understanding Society team have indicated that participants' records will be linked to the Hospital Episode Statistics (HES) database (holds data on admissions, outpatient appointments, and Accident and Emergency attendances at NHS hospitals), the NHS Central Register (NHSCR, holds mainly demographic information with very little health data), and data from "NHS and related agencies" (Understanding Society, 2015). When the data are released, they would first, allow a more recent assessment of

inequalities in mental health service use for Pakistani women compared with women of other ethnic groups, and second, they would allow researchers to test if the theory tested here about social networks influencing mental health service use holds causally, since Understanding Society employs a longitudinal survey design. Further, depending on the extent of health records data that are released in this way, it may also be possible to evaluate the ethnic inequalities in a wider range of outpatient mental health services than was possible for this thesis, as well as inequalities in inpatient mental health services.

This thesis was able to assess one mechanism by which social networks impact on mental health service use (through their influence on mental illness). It was not possible to assess other possible mechanisms that have been proposed by Gourash (1978), specifically if social network members transmit their own values about mental illness and mental health services to women, and if they give advice about where to seek help from. The first of these mechanisms relates to stigma of mental illness that women may experience in their networks which was shown by the systematic review in this thesis (Chapter 3) to be influential in decisions to seek help for Pakistani women. However, the systematic review also showed that the levels of stigma between Pakistani women and women of other ethnic groups in the UK have not been investigated comparatively within qualitative studies, and quantitative data have not been collected to perform this type of analysis. The Understanding Society survey may be a potential vehicle for researchers to collect this type of information. This same survey would also be ideal for collecting data about who people speak to about their health problems. Understanding Society contains a module named “3 Best Friends” (Knies, 2014), in which participants are asked what they talk to their three closest friends about (the options are: music, sport, work, politics, religion, family or children, books, magazines, films, TV, relationships, food and drink, travel, other hobbies and interests). These questions were asked in Wave 3 of the survey (collected between 2011 and 2013), are being asked as part of Wave 6 data collection (2014 – 2016), and are

due to be collected again in Wave 9 (2017 – 2019). At Wave 9 there is the opportunity to add mental health (and perhaps health more generally) to the list of things people may talk to their best friends about.

Finally, this thesis was not able to investigate the association between institutional racism and racial discrimination in encounters with health professionals, and mental health service use. It is known from previous work that health professionals may not allocate treatment equally amongst ethnic groups (Bhui et al., 2012; McKenzie & Bhui, 2007; Rogers & Pilgrim, 2010), and health professionals' attitudes have been shown to be influential in mental health treatment decisions for South Asian women in previous qualitative work (Burr, 2002). One way in which to extend the work in this thesis would be to include the collection of measures of perceived discrimination from health, and mental health professionals in Wave 9 of the Understanding Society survey. This survey already collects (biennially) participants' experience of racial discrimination from employers on the grounds of ethnicity or religion. The inclusion of such questions would go some way to providing population estimates of racially discriminatory practices within NHS services. These data could be used to highlight the magnitude of the problem in mental health services, and inform potential solutions.

7.5. Implications for Health Practice and Policy

This thesis showed that there were differences between Pakistani and Indian women in the use of mental health services, which is an important finding especially as previous research studies have suggested the rates to be the same for Pakistani and Indian women (C. Cooper et al., 2013; J. Cooper et al., 2010). This finding adds to the argument of other academic researchers that have emphasised the need for better ethnic monitoring in NHS mental health services, in order to highlight and address ethnic inequalities in mental health service use (Aspinall & Anionwu, 2002; Aspinall, 2006; Psoinos et al.,

2011). It is important to re-emphasise this point as a result of the findings of this thesis, as it is worrying that in 2015, 20 years after mandatory ethnic monitoring was introduced for NHS inpatient services (Aspinall, 1995), one of the most recent mental health service use (IAPT) reports from the NHS shows that large proportions (27%) of ethnicity data were missing for service users (Community and Mental Health Team: Health and Social Care Information Centre, 2014a), although it must be acknowledged that the levels of ethnic reporting are better than in the 1990s (Mathur et al., 2014). It is even more worrying that poor standards of ethnic reporting have remained after the end of a targeted Department of Health programme to reduce racial inequality in the provision of mental health services (Department of Health, 2005).

What is perhaps most worrying is that since the end of this programme, race equality in mental health services has disappeared from mental health policy (Fitzpatrick et al., 2014). Specifically, the Department of Health has not formulated a policy to address ethnic inequalities in mental health service use. This has identifiable consequences for the monitoring, and redress, of ethnic inequalities. For example, the comprehensive government statistics (from the Count Me in Censuses 2005 to 2010) that were used to ascertain Pakistani women's mental health service use in the systematic review of this thesis (Chapter 3), are no longer collected by the NHS. Admittedly, there were some limitations to these figures, namely the use of outdated population estimates in the calculation of standardised rates of use. However, these statistics were much more accurate than the current statistics that are provided by the NHS. The current figures are not calculated for men and women separately, nor are they standardised to the population age profile of England. It is difficult to see how enduring inequalities in access to health services will be redressed, without first and foremost, accurate ethnic monitoring figures.

There is a need for a new race equality policy that must re-iterate the requirement for comprehensive ethnic group recording in NHS mental health services in order to

produce adequate statistics on the use of mental health services by ethnic group. Without these data, researchers will not be able to assess the true extent of ethnic inequalities in mental health service use in the UK.

References

Acock, A. C. (2005). Working With Missing Values. *Journal of Marriage and Family*, *67*(November), 1012–1028.

Adamson, J., Ben-Shlomo, Y., Chaturvedi, N., & Donovan, J. (2003). Ethnicity, socio-economic position and gender - do they affect reported health-care seeking behaviour? *Social Science & Medicine*, *57*(5), 895–904.

Agius, M., Talwar, A., Murphy, S., & Zaman, R. (2010). Issues regarding the delivery of early intervention psychiatric services to the South Asian population in England. *Psychiatria Danubina*, *22*(2), 266–269.

Ahmad, W. (1992). The maligned healer: The "hakim" and western medicine. *New Community*, *18*(4), 521–536.

Ahmad, W., & Bradby, H. (2007). Locating ethnicity and health: exploring concepts and contexts. *Sociology of Health & Illness*, *29*(6), 795–810.

Albert, M., Becker, T., McCrone, P., & Thornicroft, G. (1998). Social Networks and Mental Health Service Utilisation - a Literature Review. *International Journal of Social Psychiatry*, *44*(4), 248–266.

Albizu-Garcia, C. E., Alegría, M., Freeman, D., & Vera, M. (2001). Gender and health services use for a mental health problem. *Social Science & Medicine*, *53*(7), 865–78.

Allison, P. (2008). Convergence Failures in Logistic Regression. In *SAS Global Forum 2008*. San Antonio, Texas: SAS Global Forum.

Allison, P. (2012a). Handling Missing Data by Maximum Likelihood. In *SAS Global Forum 2012*. Orlando, Florida: SAS Global Forum.

Allison, P. (2012b). Logistic Regression for Rare Events. Retrieved June 18, 2014, from http://www.statisticalhorizons.com/logistic-regression-for-rare-events

Almeida, J., Molnar, B. E., Kawachi, I., & Subramanian, S. V. (2009). Ethnicity and nativity status as determinants of perceived social support: Testing the concept of familism. *Social Science & Medicine*, *68*(10), 1852–1858.

Almeida, J., Subramanian, S. V, Kawachi, I., & Molnar, B. E. (2011). Is blood thicker than water? Social support, depression and the modifying role of ethnicity/ nativity status. *Journal of Epidemiology and Community Health*, *65*, 51–56.

Anand, A. S., & Cochrane, R. (2005). The Mental Health Status of South Asian Women in Britain: A Review of the UK Literature. *Psychology & Developing Societies*, *17*(2), 195–214.

Andrews, D. W. K. (2000). Inconsistency of the Bootstrap when a Parameter is on the Boundary of the Parameter Space. *Econometrica*, *68*(2), 399–405.

Aneshensel, C. S. (2012). Mental Illness as a Career: Sociological Perspectives. In C. S. Aneshensel, J. Phelan, & A. Bierman (Eds.), *Handbook of the Sociology of Mental Health* (2nd ed., pp. 603–620). London: Springer.

Anglin, D. M., Link, B., & Phelan, J. (2006). Racial Differences in Stigmatizing Attitudes Toward People With Mental Illness. *Psychiatric Services*, *57*(6), 857–862.

Anwar, M. (1979). *The Myth of Return: Pakistanis in Britain*. London: Heinemann.

Anyaegbu, G. (2010). Using the OECD equivalence scale in taxes and benefits analysis. *Economic & Labour Market Review*, *4*(1), 49–54.

Asparouhov, T., & Muthen, B. (2012). Using Mplus TECH11 and TECH14 to test the number of latent classes. Mplus Web Notes: No. 14 May 22, 2012. Retrieved April 24, 2015, from https://www.statmodel.com/examples/webnotes/webnote14.pdf

Asparouhov, T., & Muthén, B. (2014). Auxiliary Variables in Mixture Modeling: Three-Step Approaches Using Mplus. *Structural Equation Modeling*, *21*, 329–341.

Aspinall, P. J. (1995). Department of Health's requirement for mandatory collection of data on ethnic group of inpatients. *British Medical Journal*, *311*, 1006–1009.

Aspinall, P. J. (2006). Informing progress towards race equality in mental healthcare: is routine data collection adequate? *Advances in Psychiatric Treatment*, *12*(2), 141–151.

Aspinall, P. J., & Anionwu, E. (2002). The role of ethnic monitoring in mainstreaming race equality and the modernization of the NHS: A neglected agenda? *Critical Public Health*, *12*(1), 1–15.

Atkin, K. (2004). Institutional racism, policy and practice. In S. Ali & K. Atkin (Eds.), *Primary Healthcare and South Asian Populations* (pp. 9–19). Abingdon, Oxon: Radcliffe Medical Press Ltd.

Baghal, T. Al, Knies, G., & Burton, J. (2014). Linking Administrative Records to Surveys: Differences in the Correlates to Consent Decisions. Understanding Society Working Paper Series No. 2014 - 09. Colchester: ISER, University of Essex. Retrieved from https://www.iser.essex.ac.uk/research/publications/working-papers/understanding-society/2014-09 [Accessed 8th October 2015]

Bajekal, M. (2001). Use of health services and prescribed medicines. In B. Erens, P. Primatesta, & G. Prior (Eds.), *Health Survey for England - The Health of Minority Ethnic Groups '99: Volume 1 Findings*. London: The Stationery Office.

Balarajan, R., Yuen, P., & Soni Raleigh, V. (1989). Ethnic differences in general practitioner consultations. *British Medical Journal*, *299*, 958–960.

Barley, E. A., Murray, J., Walters, P., & Tylee, A. (2011). Managing depression in primary care: A meta-synthesis of qualitative and quantitative research from the UK to identify barriers and facilitators. *BMC Family Practice*, *12*(1), 47.

Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

Barrera, M. (1986). Distinctions Between Social Support Concepts, Measures, and Models. *American Journal of Community Psychology*, *14*(4), 413–445.

Batsleer, J., Chantler, K., & Burman, E. (2003). Responses of health and social care staff to South Asian women who attempt suicide and/or self-harm. *Journal of Social Work Practice*, *17*(1), 103–114.

Bebbington, P., Meltzer, H., Brugha, T., Farrell, M., Jenkins, R., Ceresa, C., & Lewis, G. (2003). Unequal access and unmet need: neurotic disorders and the use of primary care services. *International Review of Psychiatry*, *15*(1-2), 115–122.

Becares, L. (2015). Which ethnic groups have the poorest health? In S. Jivraj & L. Simpson (Eds.), *Ethnic identity and inequalities in Britain* (pp. 123–140). Bristol: Policy Press.

Becares, L., Nazroo, J., & Stafford, M. (2009). The buffering effects of ethnic density on experienced racism and health. *Health & Place*, *15*(3), 670–678.

Becker, T., Leese, M., McCrone, P., Clarkson, P., Szmukler, G., & Thornicroft, G. (1998). Impact of community mental health services on users' social networks. PRiSM Psychosis Study 7. *British Journal of Psychiatry*, *173*, 404–408.

Becker, T., Thornicroft, G., Leese, M., McCrone, P., Johnson, S., Albert, M., & Turner, D. (1997). Social networks and service use among representative cases of psychosis in south London. *The British Journal of Psychiatry*, *171*, 15–19.

Beliappa, J. (1991). *Illness or Distress? Alternative models of mental health*. London: Confederation of Indian Organisations.

Bentler, P. M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin*, *107*(2), 238–246.

Berthoud, R., & Beishon, S. (1997). People, Families and Households. In T. Modood, R. Berthoud, J. Lakey, J. Nazroo, P. Smith, S. Virdee, & S. Beishon (Eds.), *Ethnic Minorities in Britain: Diversity and Disadvantage* (pp. 18–59). London: Policy Studies Institute.

Berthoud, R., Fumagalli, L., Lynn, P., & Platt, L. (2009). Design of the Understanding Society Ethnic Minority Boost Sample. Understanding Society Working Paper Series No. 2009 - 02. Colchester: ISER, University of Essex. Retrieved from https://www.understandingsociety.ac.uk/research/publications/working-paper/understanding-society/2009-02 %5BAccessed [Accessed 15th January 2013]

Bhachu, P. (1985). *Twice Migrants: East African Sikh Settlers in Britain*. London: Tavistock Publications Ltd.

Bhardwaj, A. (2001). Growing Up Young, Asian and Female in Britain: A Report on Self-Harm and Suicide. *Feminist Review*, *68*, 52–67.

Bhugra, D. (2002). Suicidal Behavior in South Asians in the UK. *Crisis*, *23*(3), 108–113.

Bhugra, D., Desai, M., & Baldwin, D. S. (1999). Attempted suicide in west London, I. Rates across ethnic communities. *Psychological Medicine*, *29*(5), 1125–1130.

Bhui, K. S., Ascoli, M., & Nuamh, O. (2012). The place of race and racism in cultural competence: What can we learn from the English experience about the narratives of evidence and argument? *Transcultural Psychiatry*, *49*(2), 185–205.

Bhui, K. S., & Bhugra, D. (2002). Mental illness in Black and Asian ethnic minorities: pathways to care and outcomes. *Advances in Psychiatric Treatment, 8*, 26–33.

Bhui, K. S., & Sashidharan, S. P. (2003). Should there be separate psychiatric services for ethnic minority groups? *The British Journal of Psychiatry*, *182*(1), 10–12.

Bhui, K. S., Stansfeld, S. A., Hull, S., Priebe, S., Mole, F., & Feder, G. (2003). Ethnic variations in pathways to and use of specialist mental health services in the UK. Systematic review. *The British Journal of Psychiatry*, *182*, 105–116.

Billings, A. G., & Moos, R. H. (1982). Social Support and Functioning Among Community and Clinical Groups: A Panel Model. *Journal of Behavioral Medicine, 5*(3), 295–311.

Boreham, R. (2012). Understanding Society W2: Technical Report. London: NatCen Social Research.

Bowes, A. M., & Meehan Domokos, T. (1996). Pakistani women and maternity care: raising muted voices. *Sociology of Health & Illness*, *18*(1), 45–65.

Bowl, R. (2007a). Responding to ethnic diversity: black service users' views of mental health services in the UK. *Diversity in Health and Social Care, 4*, 201–210.

Bowl, R. (2007b). The need for change in UK mental health services: South Asian service users' views. *Ethnicity & Health*, *12*(1), 1–19.

Bowler, I. (1993). "They're not the same as us": midwives' stereotypes of South Asian descent maternity patients. *Sociology of Health and Illness*, *15*(2), 157–178.

Bradby, H., Varyani, M., Oglethorpe, R., Raine, W., White, I., & Helen, M. (2007). British Asian families and the use of child and adolescent mental health services: A qualitative study of a hard to reach group. *Social Science & Medicine*, *65*, 2413–2424.

Brewin, C. (1980). Explaining the lower rates of psychiatric treatment among Asian immigrants to the United Kingdom: A preliminary study. *Social Psychiatry*, *15*(1), 17–19.

Brown, C., & Ritchie, J. (1981). *Focussed Enumeration: the development of a method for sampling ethnic minority groups*. London: Policy Studies Institute and Social & Community Planning Research.

Brown, G. W., & Harris, T. (1978). *Social Origins of Depression. A study of psychiatric disorder in women*. London: Tavistock Publications Ltd.

Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research* (2nd ed.). New York, NY: The Guilford Press.

Burman, E., Chantler, K., & Batsleer, J. (2002). Service responses to South Asian women who attempt suicide or self-harm: challenges for service commissioning and delivery. *Critical Social Policy*, *22*, 641–668.

Burr, J. (2002). Cultural stereotypes of women from South Asian communities: mental health care professionals' explanations for patterns of suicide and depression. *Social Science & Medicine*, *55*(5), 835–845.

Byrne, B. M. (2012). *Structural Equation Modeling with Mplus: Basic Concepts, Applications and Programming*. Hove: Taylor & Francis Group.

Calderwood, L., & Tait, C. (2001). Self-reported health and psychosocial well-being. In B. Erens, P. Primatesta, & G. Prior (Eds.), *Health Survey for England - The Health of Minority Ethnic Groups '99: Volume 1 Findings*. London: The Stationery Office.

Campbell, C., & McLean, C. (2003). Social capital, local community participation and the construction of Pakistani identities in England: implications for health inequalities policies. *Journal of Health Psychology*, *8*(2), 247–262.

Care Quality Commission & National Mental Health Development Unit. (2010). *Count me in 2009: Results of the 2009 national census of inpatients and patients on supervised community treatment in mental health and learning disability services in England and Wales*. London: Care Quality Commission.

Care Quality Commission & National Mental Health Development Unit. (2011). *Count me in 2010: Results of the 2010 national census of inpatients and patients on supervised community treatment in mental health and learning disability services in England and Wales*. London: Care Quality Commission.

Carmichael, S., & Hamilton, C. V. (1967). *Black Power: The Politics of Liberation in America*. New York, NY: Random House Inc.

Cattell, V. (2001). Poor people, poor places, and poor health: the mediating role of social networks and social capital. *Social Science & Medicine, 52,* 1501–1516.

Chang, J., Chen, C., & Alegría, M. (2014). Contextualising Social Support: Pathways to help seeking in Latinos, Asian Americans, and Whites. *Journal of Social and Clinical Psychology*, *33*(1), 1–24.

Chantler, K., Burman, E., & Batsleer, J. (2003). South Asian women: exploring systemic service inequalities around attempted suicide and self-harm. *European Journal of Social Work*, *6*(1), 33–48.

Chapple, A., Ling, M., & May, C. (1998). General practitioners' perceptions of the illness behaviour and health needs of South Asian women with Menorrhagia. *Ethnicity & Health*, *3*(1-2), 81–93.

Chaudhry, N., Husain, N., Tomenson, B., & Creed, F. (2012). A prospective study of social difficulties, acculturation and persistent depression in Pakistani women living in the UK. *Psychological Medicine*, *42*(06), 1217–1226.

Chaudhry, N., Waheed, W., Husain, N., Bhatti, S., & Creed, F. (2009). Development and pilot testing of a social intervention for depressed women of Pakistani family origin in the UK. *Journal of Mental Health*, *18*(6), 504–509.

Cheshire, H., Ofstedal, M. B., Scholes, S., & Schroeder, M. (2011). A comparison of response rates in the English Longitudinal Study of Ageing and the Health and Retirement Study. *Longitudinal and Life Course Studies*, *2*(2), 127–144.

Chew-Graham, C., Bashir, C., Chantler, K., Burman, E., & Batsleer, J. (2002). South Asian women, psychological distress and self-harm: lessons for primary care trusts. *Health & Social Care in the Community*, *10*(5), 339–347.

Cinnirella, M., & Loewenthal, K. M. (1999). Religious and ethnic group influences on beliefs about mental illness: a qualitative interview study. *The British Journal of Medical Psychology*, *72*, 505–524.

Clark, D. M. (2011). Implementing NICE guidelines for the psychological treatment of depression and anxiety disorders: the IAPT experience. *International Review of Psychiatry*, *23*(4), 318–27.

Clark, D. M., Layard, R., Smithies, R., Richards, D. A., Suckling, R., & Wright, B. (2009). Improving access to psychological therapy: Initial evaluation of two UK demonstration sites. *Behaviour Research and Therapy*, *47*(11), 910–920.

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., … Thornicroft, G. (2015). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine*, *45*(1), 11–27.

Cochrane, R. (1977). Mental Illness in Immigrants to England and Wales: An Analysis of Mental Hospital Admissions, 1971. *Social Psychiatry*, *12*, 25–35.

Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis. *Psychological Bulletin*, *98*(2), 310–357.

Cole, D. A., & Maxwell, S. E. (2003). Testing Mediational Models With Longitudinal Data: Questions and Tips in the Use of Structural Equation Modeling. *Journal of Abnormal Psychology*, *112*(4), 558–577.

Collins, L. M., & Lanza, S. T. (2010). *Latent Class and Latent Transition Analysis with Applications in the Social, Behavioural, and Health Sciences*. Hoboken, NJ: John Wiley & Sons Inc.

Commander, M. J., Odell, S. M., Surtees, P. G., & Sashidharan, S. P. (2004). Care pathways for south Asian and white people with depressive and anxiety disorders in the community. *Social Psychiatry & Psychiatric Epidemiology*, *39*, 259–264.

Commander, M. J., Sashidharan, S. P., Odell, S. M., & Surtees, P. G. (1997). Access to mental health care in an inner-city health district. II: Association with demographic factors. *The British Journal of Psychiatry*, *170*(4), 317–320.

Commission for Healthcare Audit and Inspection. (2005). *Count me in: Results of a national census of inpatients in mental health hospitals and facilities in England and Wales*. London: Commission for Healthcare Audit and Inspection.

Commission for Healthcare Audit and Inspection. (2007a). *Count me in 2007: Results of the 2007 national census of inpatients in mental health and learning disability services in England and Wales.* London: Commission for Healthcare Audit and Inspection.

Commission for Healthcare Audit and Inspection. (2007b). *Count me in: Results of the 2006 national census of inpatients in mental health and learning disability services in England and Wales.* London: Commission for Healthcare Audit and Inspection.

Commission for Healthcare Audit and Inspection. (2008). *Count me in 2008: Results of the 2008 national census of inpatients in mental health and learning disability services in England and Wales.* London: Commission for Healthcare Audit and Inspection.

Community and Mental Health Team: Health and Social Care Information Centre. (2013). *Mental Health Bulletin: Annual report from MHMDS returns - England 2011-2012, initial national figures.* Leeds: Health and Social Care Information Centre.

Community and Mental Health Team: Health and Social Care Information Centre. (2014a). *Psychological Therapies, Annual Report on the use of IAPT services: England-2013/14 Experimental Statistics*. Leeds: Health and Social Care Information Centre.

Community and Mental Health Team: Health and Social Care Information Centre. (2014b). *Psychological Therapies, England: Annual Report on the use of Improving Access to Psychological Therapies services - 2012/2013. Experimental Statistics*. Leeds: Health and Social Care Information Centre.

Community and Mental Health Team: Health and Social Care Information Centre. (2015a). *Improving Access to Psychological Therapies (IAPT) Executive Summary July 2015*. Leeds: Health and Social Care Information Centre.

Community and Mental Health Team: Health and Social Care Information Centre. (2015b). *Mental Health Bulletin. Annual Statistics, 2014-15*. Leeds: Health and Social Care Information Centre.

Conner, K. O., Copeland, V. C., Grote, N. K., Koeske, G., Rosen, D., Reynolds, C. F., & Brown, C. (2010). Mental Health Treatment Seeking Among Older Adults With Depression: The Impact of Stigma and Race. *American Journal of Geriatric Psychiatry*, *18*(6), 531–543.

Cooper, C., Bebbington, P., McManus, S., Meltzer, H., Stewart, R., Farrell, M., … Livingston, G. (2010). The treatment of Common Mental Disorders across age groups: results from the 2007 Adult Psychiatric Morbidity Survey. *Journal of Affective Disorders*, *127*(1-3), 96–101.

Cooper, C., Spiers, N., Livingston, G., Jenkins, R., Meltzer, H., Brugha, T., … Bebbington, P. (2013). Ethnic inequalities in the use of health services for common mental disorders in England. *Social Psychiatry & Psychiatric Epidemiology*, *48*(5), 685–692.

Cooper, J., Husain, N., Webb, R., Waheed, W., Kapur, N., Guthrie, E., & Appleby, L. (2006). Self-harm in the UK: differences between South Asians and Whites in rates, characteristics, provision of service and repetition. *Social Psychiatry & Psychiatric Epidemiology*, *41*(10), 782–788.

Cooper, J., Murphy, E., Webb, R., Hawton, K., Bergen, H., Waters, K., & Kapur, N. (2010). Ethnic differences in self-harm, rates, characteristics and service provision: three-city cohort study. *The British Journal of Psychiatry*, *197*(3), 212–218.

Corrigan, P. W. (2004). How Stigma Interferes With Mental Health Care. *American Psychologist*, *59*(7), 614–625.

Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The Impact of Mental Illness Stigma on Seeking and Participating in Mental Health Care. *Psychological Science in the Public Interest*, *15*(2), 37–70.

Costello, A. B., & Osborne, J. W. (2005). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment Research & Evaluation*, *10*(7), 1–9.

Cox, B. D., Blaxter, M., Buckle, A. L. J., Fenner, N. P., Golding, J. F., Gore, M., … Whichelow, M. (1987). The Health and Lifestyle Survey. London: The Health Promotion Research Trust.

Craig, G., & Walker, R. (2012). "Race" on the welfare margins: the UK government's Delivering Race Equality mental health programme. *Community Development Journal*, *47*(4), 491–505.

Critical Appraisal Skills Programme (CASP). (2014a). *CASP Qualitative Checklist*. Oxford: CASP. Retrieved from http://www.casp-uk.net/#!casp-tools-checklists/c18f8 [Accessed 26th August 2014]

Critical Appraisal Skills Programme (CASP). (2014b). *CASP Systematic Review Checklist*. Oxford: CASP. Retrieved from http://www.casp-uk.net/#!casp-tools-checklists/c18f8 [Accessed 26th August 2014]

Currer, C. (1984). Pathan Women in Bradford - Factors Affecting Mental Health With Particular Reference To the Effects of Racism. *International Journal of Social Psychiatry*, *30*, 72–76.

Dale, A., Shaheen, N., Kalra, V., & Fieldhouse, E. (2002). Routes into education and employment for young Pakistani and Bangladeshi women in the UK. *Ethnic & Racial Studies*, *25*(6), 942–968.

Das-Munshi, J., Becares, L., Boydell, J. E., Dewey, M. E., Morgan, C., Stansfeld, S. A., & Prince, M. J. (2012). Ethnic density as a buffer for psychotic experiences: findings from a national survey (EMPIRIC). *The British Journal of Psychiatry*, *201*(4), 282–290.

Das-Munshi, J., Becares, L., Dewey, M. E., Stansfeld, S. A., & Prince, M. J. (2010). Understanding the effect of ethnic density on mental health: multi-level investigation of survey data from England. *British Medical Journal*, *341*(c5367). http://doi.org/10.1136/bmj.c5367

Das-Munshi, J., Castro-Costa, E., Dewey, M. E., Nazroo, J., & Prince, M. (2014). Cross-cultural factorial validation of the Clinical Interview Schedule – Revised (CIS-R); findings from a nationally representative survey (EMPIRIC). *International Journal of Methods in Psychiatric Research*, *23*(2), 229–244.

Dein, S., & Sembhi, S. (2001). The Use of Traditional Healing in South Asian Psychiatric Patients in the UK: Interactions Between Professional and Folk Psychiatries. *Transcultural Psychiatry*, *38*(2), 243–257.

Department of Health. (2005). *Delivering race equality in mental health care: An action plan for reform inside and outside services*. London: Department of Health.

Department of Health. (2008). *Improving Access to Psychological Therapies Implementation Plan: National Guidelines for Regional Delivery*. London: Department of Health.

Department of Health. (2011). *Talking therapies: A four-year plan of action*. London: Department of Health.

Donaldson, L. J. (1986). Health and social status of elderly Asians: a community survey. *British Medical Journal*, *293*, 1079–1082.

Dressler, W. W. (1985). Extended Family Relationships, Social Support, and Mental Health in a Southern Black Community. *Journal of Health and Social Behavior*, *26*(1), 39–48.

Efron, B. (1987). Better Bootstrap Confidence Intervals. *Journal of the American Statistical Association*, *82*(397), 171–185.

Equality Act 2010. (n.d.). (c.15). London: The Stationery Office.

Erens, B., & Primatesta, P. (1999). *Health Survey for England: cardiovascular disease '98, volumes I and II*. London: The Stationery Office.

Erens, B., Primatesta, P., & Prior, G. (2000). *Health Survey for England: the health of minority ethnic groups 1999, volumes I and II*. London: The Stationery Office.

Erens, B., Prior, G., Korovessis, C., Calderwood, L., Brookes, M., & Primatesta, P. (2001). Survey methodology and response. In B. Erens, P. Primatesta, & G. Prior (Eds.), *Health Survey for England – The Health of Minority Ethnic Groups '99: Volume 2: Methodology and documentation.* London: The Stationery Office.

Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre). (2010). *EPPI-Centre Methods for Conducting Systematic Reviews*. London: Institute of Education.

Fabrigar, L. R., Wegener, D. T., Maccallum, R. C., & Strahan, E. J. (1999). Evaluating the Use of Exploratory Factor Analysis in Psychological Research. *Psychological Methods*, *4*(3), 272–299.

Fazil, Q., & Cochrane, R. (2003). The prevalence of depression in Pakistani women living in the West midlands. *Pakistani Journal of Women's Studies: Alam-E-Niswan*, *10*(1), 21–30.

Fenton, S., & Sadiq-Sangster, A. (1996). Culture, relativism and the expression of mental distress: South Asian women in Britain. *Sociology of Health & Illness*, *18*(1), 66–85.

Fernando, S. (2012). Race and culture issues in mental health and some thoughts on ethnic identity. *Counselling Psychology Quarterly*, *25*(2), 113–123.

Finney, N., Kapadia, D., & Peters, S. (2015). How are poverty, ethnicity and social networks related? York: Joseph Rowntree Foundation.

Fischer, C. S. (1982). *To Dwell Among Friends. Personal Networks in Town and City*. London: The University of Chicago Press.

Fitzpatrick, R., Kumar, S., Nkansa-Dwamena, O., & Thornel, L. (2014). *Ethnic Inequalities in Mental Health: Promoting Lasting Positive Change. Report of Findings to LankellyChase Foundation, Mind, The Afiya Trust and Centre for Mental Health*. London: LankellyChase Foundation.

Floyd, F. J., & Widaman, K. F. (1995). Factor Analysis in the Development and Refinement of Clinical Assessment Instruments. *Psychological Assessment, 7*(3), 286–299.

Fountain, J., & Hicks, J. (2010). *Delivering race equality in mental health care: report on the findings and outcomes of the community engagement programme 2005-2008*. Preston: University of Central Lancashire.

Fuhrer, R., & Stansfeld, S. A. (2002). How gender affects patterns of social relations and their impact on health: a comparison of one or multiple sources of support from "close persons." *Social Science & Medicine, 54*(5), 811–825.

Fuhrer, R., Stansfeld, S. A., Chemali, J., & Shipley, M. J. (1999). Gender, social relations and mental health: prospective findings from an occupational cohort (Whitehall II study). *Social Science & Medicine, 48*(1), 77–87.

Furnham, A., & Shiekh, S. (1993). Gender, Generational and Social Support Correlates of Mental Health in Asian Immigrants. *International Journal of Social Psychiatry, 39*, 22–33.

Gabbidon, J., Farrelly, S., Hatch, S. L., Henderson, C., Williams, P., Bhugra, D., … Clement, S. (2014). Discrimination Attributed to Mental Illness or Race-Ethnicity by Users of Community Psychiatric Services. *Psychiatric Services, 65*(11), 1360–1366.

Gary, F. A. (2005). Stigma: Barrier to Mental Health Care Among Ethnic Minorities. *Issues in Mental Health Nursing, 26*(10), 979–999.

Gask, L., Aseem, S., Waquas, A., & Waheed, W. (2011). Isolation, feeling "stuck" and loss of control: understanding persistence of depression in British Pakistani women. *Journal of Affective Disorders, 128*(1-2), 49–55.

Gater, R., Tomenson, B., Percival, C., Chaudhry, N., Waheed, W., Dunn, G., … Creed, F. (2009). Persistent depressive disorders and social stress in people of Pakistani origin and white Europeans in UK. *Social Psychiatry & Psychiatric Epidemiology*, *44*(3), 198–207.

Gater, R., Waheed, W., Husain, N., Tomenson, B., Aseem, S., & Creed, F. (2010). Social intervention for British Pakistani women with depression: randomised controlled trial. *The British Journal of Psychiatry, 197*(3), 227–233.

Geiser, C. (2013). *Data Analysis with Mplus*. New York: The Guilford Press.

Gilbert, P., Gilbert, J., & Sanghera, J. (2004). A focus group exploration of the impact of izzat, shame, subordination and entrapment on mental health and service use in South Asian women living in Derby. *Mental Health, Religion & Culture, 7*(2), 109–130.

Glover, G., & Evison, F. (2009). *Use of New Mental Health Services by Ethnic Minorities in England*. Durham: North East Public Health Observatory (NEPHO).

Glover, G., Webb, M., & Evison, F. (2010). *Improving Access to Psychological Therapies. A review of the progress made by sites in the first roll-out year*. Durham: North East Public Health Observatory (NEPHO).

Goddard, M., & Smith, P. (2001). Equity of access to health care services: theory and evidence from the UK. *Social Science & Medicine*, *53*(9), 1149–1162.

Goffman, E. (1963). *Stigma: Notes on the Management of Spoiled Identity*. London: Penguin Books Ltd.

Goldberg, D. P. (1981). *The General Health Questionnaire 28*. Windsor: NFER.

Goldberg, D. P. (2010). The detection and treatment of depression in the physically ill. *World Psychiatry*, *9*, 16–20.

Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O., & Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, *27*(1), 191–197.

Goldberg, D. P., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*. Windsor, UK: NFER Nelson.

Golding, J. M., & Wells, K. B. (1990). Social Support and Use of Mental Health Services By Mexican Americans and Non-Hispanic Whites. *Basic and Applied Social Psychology*, *11*(4), 443–458.

Goodman, L. A. (1974). Exploratory latent structure analysis using both identifiable and unidentifiable models. *Biometrika*, *61*(2), 215–231.

Gorsuch, R. L. (1983). *Factor Analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

Gourash, N. (1978). Help-Seeking: A Review of the Literature. *American Journal of Community Psychology*, *6*(5), 413–423.

Green, G., Hayes, C., Dickinson, D., Whittaker, A., & Gilheany, B. (2002). The role and impact of social relationships upon well-being reported by mental health service users: A qualitative study. *Journal of Mental Health*, *11*(5), 565–579.

Greene, W. H. (2003). *Econometric Analysis* (5th ed.). Upper Saddle River, NJ: Pearson Education Inc.

Grewal, I., & Lloyd, K. R. (2002). Use of services. In W. O'Connor & J. Nazroo (Eds.), *Ethnic Differences in the Context and Experience of Psychiatric Illness: A Qualitative Study* (pp. 51–60). London: The Stationery Office.

Gupta, S., de Belder, A., & O'Hughes, L. (1995). Avoiding premature coronoary deaths in Asians in Britain. *British Medical Journal*, *311*, 1035–1036.

Hackett, R., Nicholson, J., Mullins, S., Farrington, T., Ward, S., Pritchard, G., … Mahmood, N. (2009). Enhancing pathways into care (EPIC): Community development working with the Pakistani community to improve patient pathways within a crisis resolution and home treatment service. *International Review of Psychiatry*, *21*(5), 465–471.

Hagenaars, A., de Vos, K., & Zaidi, M. A. (1994). *Poverty Statistics in the Late 1980s: Research Based on Micro-data*. Luxembourg: Office for Official Publications of the European Communities.

Harriss, K., & Shaw, A. (2009). Kinship Obligations, Gender and the Life Course: Re-Writing Migration from Pakistan to Britain. In V. S. Kalra (Ed.), *Pakistani Diasporas: Culture, Conflict, and Change* (pp. 105–128). Oxford: Oxford University Press.

Hayes, A. F. (2013). *Introduction to Moderation, Mediation and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: The Guilford Press.

Henderson, R. C., Williams, P., Gabbidon, J., Farrelly, S., Schauman, O., Hatch, S., … Clement, S. (2015). Mistrust of mental health services: ethnicity, hospital admission and unfair treatment. *Epidemiology and Psychiatric Sciences*, *24*(3), 258–265.

Her Majesty's Government, & Department of Health. (2011). *No health without mental health: a cross-government mental health outcomes strategy for people of all ages*. London: Department of Health.

Hicks, M. H.-R., & Bhugra, D. (2003). Perceived causes of suicide attempts by U.K. South Asian women. *The American Journal of Orthopsychiatry*, *73*(4), 455–462.

Holden, L., Dobson, A. J., Ware, R. S., Hockey, R., & Lee, C. (2015). Longitudinal trajectory patterns of social support: correlates and associated mental health in an Australian national cohort of young women. *Quality of Life Research*, *24*, 2075–2086.

Holgado–Tello, F. P., Chacón–Moscoso, S., Barbero–García, I., & Vila–Abad, E. (2008). Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality & Quantity*, *44*(1), 153–166.

Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied Logistic Regression* (3rd ed.). Hoboken, NJ: John Wiley & Sons Inc.

House, J. S., Umberson, D., & Landis, K. R. (1988). Structures and Processes of Social Support. *Annual Review of Sociology*, *14*, 293–318.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55.

Hussain, F. A., & Cochrane, R. (2003). Living with depression: Coping strategies used by South Asian women, living in the UK, suffering from depression. *Mental Health, Religion & Culture*, *6*(1), 21–44.

Hussain, N. (2006). Culturally determined care goals and the efficacy of statutory services. *International Journal of Qualitative Studies on Health and Well-Being*, *1*(3), 149–158.

Iacobucci, D. (2008). *Mediation Analysis*. London: Sage Publications Ltd.

Imai, K., Keele, L., & Tingley, D. (2010). A General Approach to Causal Mediation Analysis A Running Example: The Job Search Intervention. *Psychological Methods*, *15*(4), 309–334.

Ineichen, B. (1987). The mental health of Asians in Britain: a research note. *New Community*, *4*(1-2), 136–141.

Ineichen, B. (2012). Mental illness and suicide in British South Asian adults. *Mental Health, Religion & Culture*, *15*(3), 235–250.

Islam, Z., Rabiee, F., & Singh, S. P. (2015). Black and Minority Ethnic Groups' Perception and Experience of Early Intervention in Psychosis Services in the United Kingdom. *Journal of Cross-Cultural Psychology*, *46*(5), 737–753.

Jivraj, S., & Khan, O. (2015). How likely are people from minority ethnic groups to live in deprived neighbourhoods? In S. Jivraj & L. Simpson (Eds.), *Ethnic identity and inequalities in Britain*. Bristol: Policy Press.

Joint Commissioning Panel for Mental Health. (2014). *Guidance for commissioners of mental health services for people from black and minority ethnic communities*. Retrieved from http://www.jcpmh.info/good-services/black-minority-ethnic-communities/ [Accessed 13th October 2015]

Joreskog, K. G. (1969). A general approach to confirmatory maximum likelihood factor analysis. *Psychometrika*, *34*(2).

Kai, J., & Hedges, C. (1999). Minority ethnic community participation in needs assessment and service development in primary care: perceptions of Pakistani and Bangladeshi people about psychological distress. *Health Expectations*, *2*(1), 7–20.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36.

Kalathil, J. (2011). *Recovery and resilience: African, African-Caribbean and South Asian women's narratives of recovering from mental distress*. London: Mental Health Foundation.

Kalra, V. S. (2000). *From Textile Mills to Taxi Ranks: Experiences of migration, labour and social change*. Aldershot: Ashgate Publishing Ltd.

Kanwar, S., & Whomsley, S. (2011). *Working with Pakistani service users and their families. A practitioner's guide*. Cambridge: Cambridgeshire and Peterborough NHS Foundation Trust.

Kapadia, D., Brooks, H., Nazroo, J., & Tranmer, M. (2015). Pakistani women's use of mental health services & the role of social networks: a systematic review of quantitative and qualitative research. *Health & Social Care in the Community*. http://doi.org/10.1111/hsc.12305

Kapadia, D., Nazroo, J., & Clark, K. (2015). Have ethnic inequalities in the labour market persisted? In S. Jivraj & L. Simpson (Eds.), *Ethnic identity and inequalities in Britain* (pp. 161–179). Bristol: Policy Press.

Kaplan, G. A., Robert, R. E., Camacho, T. C., & Coyne, J. C. (1987). Psychosocial predictors of depression. *American Journal of Epidemiology*, *125*(2), 206–220.

Karlsen, S., & Nazroo, J. (2002). Relation between racial discrimination, social class, and health among ethnic minority groups. *American Journal of Public Health*, *92*(4), 624–631.

Karlsen, S., Nazroo, J., McKenzie, K., Bhui, K. S., & Weich, S. (2005). Racism, psychosis and common mental disorder among ethnic minority groups in England. *Psychological Medicine*, *35*, 1795–1803.

Kastner, M., Tricco, A. C., Soobiah, C., Lillie, E., Perrier, L., Horsley, T., … Straus, S. E. (2012). What is the most appropriate knowledge synthesis method to conduct a review? Protocol for a scoping review. *BMC Medical Research Methodology*, *12*, 114.

Katbamna, S., Ahmad, W., Bhakta, P., Baker, R., & Parker, G. (2004). Do they look after their own? Informal support for South Asian carers. *Health and Social Care in the Community*, *12*(5), 398–406.

Kawachi, I., & Berkman, L. F. (2001). Social Ties and Mental Health. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *78*(3), 458–467.

Keating, F. (2002). Black-Led Initiatives in Mental Health: An Overview. *Research Policy and Planning*, *20*(2), 9–20.

Kessler, R. C., Price, R. H., & Wortman, C. B. (1985). Social Factors in Psychopathology: Stress, Social Support, and Coping Processes. *Annual Review of Psychology*, *36*, 531–572.

Kleinman, A. (1987). Anthropology and Psychiatry: The Role of Culture in Cross-Cultural Research on Illness. *British Journal of Psychiatry*, *151*, 447–454.

Klineberg, E., Clark, C., Bhui, K. S., Haines, M. M., Viner, R. M., Head, J., … Stansfeld, S. A. (2006). Social support, ethnicity and mental health in adolescents. *Social Psychiatry & Psychiatric Epidemiology*, *41*, 755–760.

Knies, G. (2014). *Understanding Society The UK Household Longitudinal Study Waves 1-4, User Manual*. Colchester: Institute for Social and Economic Research, University of Essex.

Knifton, L. (2012). Understanding and addressing the stigma of mental illness with ethnic minority communities. *Health Sociology Review*, *21*(3), 287–298.

Kouzis, A. C., & Eaton, W. W. (1998). Absence of social networks, social support and health services utilization. *Psychological Medicine*, *28*, 1301–1310.

Kouzis, A. C., Ford, D. E., & Eaton, W. (2000). Social Relationships and Psychiatric Help-Seeking. In J. P. Morrissey (Ed.), *Research in Community and Mental Health (vol. 11. Social Factors in Mental Health and Illness)* (pp. 65–84). Stamford, CT: Jai Press Inc.

Krause, I. (1989). Sinking Heart: A Punjabi Communication of Distress. *Social Science & Medicine*, *29*(4), 563–575.

Lamb, J., Bower, P., Rogers, A., Dowrick, C., & Gask, L. (2012). Access to mental health in primary care: a qualitative meta-synthesis of evidence from the experience of people from “hard to reach” groups. *Health*, *16*(1), 76–104.

Lavallee, P. (2007). *Indirect Sampling*. New York, NY: Springer Science+Business Media, LLC.

Lawlor, C., Johnson, S., Cole, L., & Howard, L. M. (2012). Ethnic variations in pathways to acute care and compulsory detention for women experiencing a mental health crisis. *The International Journal of Social Psychiatry*, *58*(1), 3–15.

Lewis, G., Pelosi, A. J., Araya, R., & Dunn, G. (1992). Measuring psychiatric disorder in the community: a standardized assessment for use by lay interviewers. *Psychological Medicine*, *22*(2), 465–486.

Lindsey, M. A., Gilreath, T. D., Thompson, R., Graham, J. C., Hawley, K. M., Weisbart, C., … Kotch, J. B. (2012). Influence of caregiver network support and caregiver psychopathology on child mental health need and service use in the LONGSCAN study. *Children and Youth Services Review*, *34*(5), 924–932.

Lloyd, K. R., & Fuller, E. (2002). Use of services. In K. Sproston & J. Nazroo (Eds.), *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC): Quantitative Report* (pp. 101–115). London: The Stationery Office.

Lo, B. Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, *88*(3), 767–778.

Loewenthal, D., Mohamed, A., Mukhopadhyay, S., Ganesh, K., & Thomas, R. (2012). Reducing the barriers to accessing psychological therapies for Bengali, Urdu, Tamil and Somali communities in the UK: some implications for training, policy and practice. *British Journal of Guidance & Counselling*, *40*(1), 43–66.

Loya, F., Reddy, R., & Hinshaw, S. P. (2010). Mental Illness Stigma as a Mediator of Differences in Caucasian and South Asian College Students' Attitudes Toward Psychological Counseling. *Journal of Counseling Psychology*, *57*(4), 484–490.

Lynn, P. (2006). *Quality Profile: British Household Panel Survey. Version 2.0: Waves 1 to 13: 1991-2003*. Colchester: ISER, University of Essex.

Lynn, P. (2009). Sample Design for Understanding Society. Understanding Society Working Paper Series No. 2009 - 01. Colchester: ISER, University of Essex. Retrieved from https://www.understandingsociety.ac.uk/research/publications/working-paper/understanding-society/2009-01[Accessed 19th June 2014]

Lynn, P. (2015). Non-response models for Wave 2 (Understanding Society User Support Forum comment, 15th August). Retrieved from https://www.understandingsociety.ac.uk/support/issues/360

Mackinnon, D. P. (2008). *Introduction to Statistical Mediation Analysis*. New York, NY: Taylor & Francis.

Mackinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual Review of Psychology*, *58*, 593–614.

Mackinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the Mediation, Confounding and Suppression Effect. *Prevention Science*, *1*(4), 173–181.

Mackinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence Limits for the Indirect Effect: Distribution of the Product and Resampling Methods. *Multivariate Behavioural Research*, *39*(1), 99–128.

Macpherson, W. (1999). *The Stephen Lawrence Inquiry. Report of an Inquiry by Sir William Macpherson of Cluny. Cm 4262-I*. London: The Stationery Office.

Mallinson, S., & Popay, J. (2007). Describing depression ethnicity and the use of somatic imagery in accounts of mental distress. *Sociology of Health & Illness*, *29*(6), 857–871.

Marmot, M. (2010). *Fair Society, Health Lives: Strategic Review of Health Inequalities in England Post-2010*. London: Marmot Review.

Martinez, J. I., & Lau, A. S. (2011). Do Social Networks Push Families Toward or Away From Youth Mental Health Services?: A National Study of Families in Child Welfare. *Journal of Emotional and Behavioral Disorders*, *19*(3), 169–181.

Mathur, R., Bhaskaran, K., Chaturvedi, N., Leon, D. A., Grundy, E., & Smeeth, L. (2014). Completeness and usability of ethnicity data in UK-based primary care and hospital databases. *Journal of Public Health*, *36*(4), 684–692.

Maulik, P. K., Eaton, W. W., & Bradshaw, C. P. (2009). The role of social network and support in mental health service use: findings from the Baltimore ECA study. *Psychiatric Services*, *60*(9), 1222–1229.

Mays, N., Pope, C., & Popay, J. (2005). Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research & Policy*, *10 Suppl 1*(July), 6–20.

McClements, L. D. (1977). Equivalence scales for children. *Journal of Public Economics*, *8*, 191–210.

McCutcheon, A. L. (1987). *Latent Class Analysis*. London: Sage Publications Ltd.

McKenzie, K., & Bhui, K. (2007). Institutional racism in mental health care. *British Medical Journal*, *334*(7595), 649–650.

McKenzie, K., Bhui, K., Nanchahal, K., & Blizard, B. (2008). Suicide rates in people of South Asian origin in England and Wales: 1993-2003. *The British Journal of Psychiatry*, *193*(5), 406–409.

McManus, S., Meltzer, H., Brugha, T., Bebbington, P., & Jenkins, R. (2009). *Adult psychiatric morbidity in England, 2007: Results of a household survey*. Leeds: The Health and Social Care Information Centre.

Modood, T., Berthoud, R., Lakey, J., Nazroo, J., Smith, P., Virdee, S., & Beishon, S. (1997). *Ethnic Minorities in Britain: Diversity and Disadvantage*. London: Policy Studies Institute.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: the PRISMA Statement. *PLoS Medicine*, *6*(7), e1000097. http://doi.org/10.1371/journal.pmed.1000097

Mojtabai, R., Olfson, M., & Mechanic, D. (2002). Perceived Need and Help-Seeking in Adults With Mood, Anxiety, or Substance Use Disorders. *Archives of General Psychiatry*, *59*, 77–84.

Morgan, M., Kenten, C., Deedat, S., & On Behalf Of The Donate Programme Team. (2013). Attitudes to deceased organ donation and registration as a donor among minority ethnic groups in North America and the UK: a synthesis of quantitative and qualitative research. *Ethnicity & Health*, *18*(4), 367–390.

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *The Lancet, 370*, 851–858.

Murray, U., & Brown, D. (1998). *"They look after their own, don"t they?' Inspection of community care services for Black and ethnic minority older people*. London: Social Services Inspectorate, Department of Health.

Muthen, B. O. (2006). Re: Mediation and bootstrap standard errors (Mplus Forum comment, 21st February). Retrieved from http://www.statmodel.com/discussion/messages/11/429.html?1435150747

Muthen, B. O. (2011). Mplus Forum: Testing mediation with dichotomous variables. Mon 24th October 2011, 8.30pm.

Muthen, B. O. (2015a). Moderated Mediation (Mplus forum comment, 27th June). Retrieved from http://www.statmodel.com/cgi-bin/discus/show.cgi?11/5926

Muthen, B. O. (2015b). Standardized coefficients (Mplus forum comment, 2nd June). Retrieved from www.statmodel.com/cgi-bin/discus/show.cgi?11/16

Muthen, B. O. (2015c). Tests of model fit (Mplus forum comment, 29th May). Retrieved from http://www.statmodel.com/cgi-bin/discus/show.cgi?9/63

Muthen, B. O. (2015d). The new 3-step approach latent class analysis (Mplus Forum comment, 30th March). Retrieved from http://www.statmodel.com/cgi-bin/discus/show.cgi?13/10921

Muthen, B. O., & Asparouhov, T. (2015). Causal Effects in Mediation Modeling: An Introduction With Applications to Latent Variables. *Structural Equation Modeling*, *22*(1), 12–23.

Muthen, B. O., & Muthen, L. K. (2012). Mplus (Version 7.11) [Computer software].

Nadeem, E., Lange, J. M., Edge, D., Fongwa, M., Belin, T., & Miranda, J. (2007). Does Stigma Keep Poor Young Immigrant and U.S.-Born Black and Latina Women From Seeking Mental Health Care? *Psychiatric Services*, *58*(12), 1547–1554.

Nandi, A., & Platt, L. (2010). *Ethnic minority women's poverty and economic well being*. London: Government Equalities Office.

Natarajan, L. (2006). Self-reported health and psychosocial well-being. In K. Sproston & J. Mindell (Eds.), *Health Survey for England 2004. Volume 1: The health of minority ethnic groups* (pp. 25–61). Leeds: The Information Centre.

National Centre for Social Research & University College London. (2003). *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC): User Guide for UK Data Archive*. Colchester: UK Data Archive.

National Centre for Social Research, & University College London. Department of Epidemiology and Public Health. (2003). *Ethnic Minority Psychiatric Illness Rates in the Community, 2000 [computer file]*. UK Data Service.

National Institute for Mental Health in England. (2003). *Inside Outside: Improving Mental Health Services for Black and Minority Ethnic Communities in England*. London: Department of Health.

Nazroo, J. (1997). *The Health of Britain's Ethnic Minorities*. London: Policy Studies Institute.

Nazroo, J. (1998). Genetic, Cultural or Socio-economic vulnerability? Explaining ethnic inequalities in health. *Sociology of Health & Illness*, *20*(5), 710–730.

Nazroo, J. (1999). The Racialisation of Ethnic Inequalities in Health. In D. Dorling & S. Simpson (Eds.), *Statistics in Society: The Arithmetic of Politics*. London: Arnold.

Nazroo, J. (2001). *Ethnicity, Class and Health*. London: Policy Studies Institute.

Nazroo, J. (2003). The structuring of ethnic inequalities in health: economic position, racial discrimination, and racism. *American Journal of Public Health*, *93*(2), 277–284.

Nazroo, J. (2015). Ethnic inequalities in severe mental disorders: where is the harm? *Social Psychiatry and Psychiatric Epidemiology*, *50*, 1065–1067.

Nazroo, J., Falaschetti, E., Pierce, M., & Primatesta, P. (2009). Ethnic inequalities in access to and outcomes of healthcare: analysis of the Health Survey for England. *Journal of Epidemiology & Community Health*, *63*(12), 1022–1027.

Nazroo, J., & King, M. (2002). Psychosis - symptoms and estimated rates. In K. Sproston & J. Nazroo (Eds.), *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC): Quantitative Report* (pp. 47–62). London: The Stationery Office.

Nazroo, J., & O'Connor, W. (2002). Idioms of mental distress. In W. O'Connor & J. Nazroo (Eds.), *Ethnic Differences in the Context and Experience of Psychiatric Illness: A Qualitative Study* (pp. 29–39). London: The Stationery Office.

Netto, G., Gaag, S., Thanki, M., Bondi, L., & Munro, M. (2001). *A suitable space. Improving counselling services for Asian people*. Bristol: The Policy Press.

Nomisweb.co.uk. (2015). Nomis - Official Labour Market Statistics. Retrieved August 7, 2015, from https://www.nomisweb.co.uk/

Ojeda, V. D., & Bergstresser, S. M. (2008). Gender, Race-Ethnicity, and Psychosocial Barriers to Mental Health Care: An Examination of Perceptions and Attitudes among Adults Reporting Unmet Need. *Journal of Health and Social Behavior*, *49*(September), 317–334.

Ostman, M., & Kjellin, L. (2002). Stigma by association. Psychological factors in relatives of people with mental illness. *British Journal of Psychiatry*, *181*, 494–498.

Parry, G., Barkham, M., Brazier, J., Dent-Brown, K., Hardy, G., Kendrick, T., … Lovell, K. (2010). *An evaluation of the IAPT demonstration sites. Final Report*. Sheffield: NIHR Service Delivery and Organisation Programme.

Pawson, R., Greenhalgh, T., Harvey, G., & Walshe, K. (2005). Realist review-a new method of systematic review designed for complex policy interventions. *Journal of Health Services Research & Policy*, *10*(Suppl 1), 21–34.

Penny, E., Newton, E., & Larkin, M. (2009). Whispering on the Water British Pakistani Families' Experiences of Support From an Early Intervention Service for First-Episode Psychosis. *Journal of Cross-Cultural Psychology*, *40*(6), 969–987.

Perry, B. L., & Pescosolido, B. A. (2015). Social Network Activation: The Role of Health Discussion Partners in Recovery from Mental Illness. *Social Science & Medicine*, *125*(January), 116–128.

Pescosolido, B. A. (1992). Beyond Rational Choice: The Social Dynamics of How People Seek Help. *American Journal of Sociology*, *97*(4), 1096–1138.

Pescosolido, B. A. (2006). Of Pride and Prejudice: The Role of Sociology and Social Networks in Integrating the Health Sciences. *Journal of Health and Social Behavior*, *47*(3), 189–208.

Pescosolido, B. A. (2010). Organizing the sociological landscape for the next decades of health and health care research: the Network Episode Model III-R as cartographic subfield guide. In B. A. Pescosolido, J. K. Martin, J. McLeod, & A. Rogers (Eds.), *The Handbook of the Sociology of Health, Illness, and Healing* (pp. 39–66). New York: Springer.

Pescosolido, B. A. (2011). Social Network Influence in Mental Health and Illness, Service Use and Settings and Treatment Outcomes. In D. Pilgrim, A. Rogers, & B. A. Pescosolido (Eds.), *The Sage Handbook of Mental Health and Illness* (pp. 512–536). London: Sage Publications Ltd.

Pescosolido, B. A., & Boyer, C. A. (1999). How do people come to use mental health services? Current knowledge and changing perspectives. In A. Horwitz & T. Scheid (Eds.), *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems* (pp. 392–426). New York: Cambridge University Press.

Pescosolido, B. A., Gardner, C. B., & Lubell, K. M. (1998). How people get into mental health services: Stories of choice, coercion and "muddling through" from "first-timers." *Social Science & Medicine*, *46*(2), 275–286.

Pescosolido, B. A., Medina, T. R., Martin, J. K., & Long, J. S. (2013). The "Backbone" of Stigma: Identifying the Global Core of Public Prejudice Associated with Mental Illness. *American Journal of Public Health*, *103*(5), 853–860.

Pescosolido, B. A., Wright, E. R., Alegría, M., & Vera, M. (1998). Social Networks and Patterns of Use Among the Poor with Social Networks Mental Health Problems in Puerto Rico. *Medical Care*, *36*(7), 1057–1072.

Petersen, J. (2015). Household weights in b_hhresp Wave 2 (Understanding Society User Support Forum comment, 16th January). Retrieved from https://www.understandingsociety.ac.uk/support/issues/335

Petticrew, M., & Roberts, H. (2006). *Systematic Reviews in the Social Sciences: A Practical Guide*. Oxford: Blackwell Publishing.

Phelan, J., Bromet, E. J., & Link, B. (1998). Psychiatric Illness and Family Stigma. *Schizophrenia Bulletin*, *24*(1), 115–126.

Platt, L. (2009). Social activity, social isolation and ethnicity. *The Sociological Review*, *57*(4), 670–702.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., … Duffy, S. (2006). Guidance on the Conduct of Narrative Synthesis in Systematic Reviews: Final report. Lancaster: The University of Lancaster.

Pope, C., Mays, N., & Popay, J. (2007). *Synthesizing Qualitative and Quantitative Health Evidence*. Maidenhead: Open University Press.

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's Electric Factor Analysis Machine. *Understanding Statistics*, *2*(1), 13–43.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions. *Multivariate Behavioural Research*, *42*(1), 185–227.

Psoinos, M., Hatzidimitriadou, E., Butler, C., & Barn, R. (2011). *Ethnic Monitoring in Healthcare Services in the UK as a mechanism to address Health Disparities: A Narrative Review*. London: Swan IPI.

Raftery, A. E. (1995). Bayesian Model Selection in Social Research. *Sociological Methodology*, *25*, 111–163.

Raghunathan, T. E., Lepkowski, J. M., Hoewyk, J. Van, & Solenberger, P. (2001). A Multivariate Technique for Multiply Imputing Missing Values Using a Sequence of Regression Models. *Survey Methodology*, *27*(1), 85–95.

Raleigh, V. S., Irons, R., Hawe, E., Scobie, S., Cook, A., Reeves, R., … Harrison, J. (2007). Ethnic variations in the experiences of mental health service users in England: results of a national patient survey programme. *The British Journal of Psychiatry*, *191*(4), 304–312.

Ramaswamy, V., Desarbo, W. S., Reibstein, D. J., & Robinson, W. T. (1993). An Empirical Pooling Approach for Estimating Marketing Mix Elasticities with PIMS Data. *Marketing Science*, *12*(1), 103–124.

Rao, D., Feinglass, J., & Corrigan, P. W. (2007). Racial and Ethnic Disparities in Mental Illness Stigma. *The Journal of Nervous and Mental Disease*, *195*(12), 1020–1023.

RAWOrg (Rights and Wellbeing of Racialised Groups). (2011). *The End of Delivering Race Equality? Perspectives of Frontline Workers and Service Users from Racialised Groups*. London: RAWOrg.

Rehman, H., & Owen, D. (2013). *Mental Health Survey of Ethnic Minorities*. Ethnos Research and Consultancy. Retrieved from www.time-to-change.org.uk/sites/default/files/TTC_Final Report_ETHNOS_summary_1.pdf [Accessed 14th August 2014]

Rencher, A. C., & Christensen, W. F. (2012). *Methods of Multivariate Analysis* (3rd ed.). Hoboken, NJ: John Wiley & Sons Inc.

Rocheron, Y. (1988). The Asian Mother and Baby Campaign: the construction of ethnic minorities' health needs. *Critical Social Policy*, *8*(22), 4–23.

Rodriguez, A. (2007). Migration and Increased Participation in Public Life: The Case of Pakistani Women in London. *Frontiers: A Journal of Women Studies*, *28*(3), 94–112.

Rogers, A., & Pilgrim, D. (2010). *A Sociology of Mental Health and Illness* (4th ed.). Maidenhead: Open University Press.

Rothon, C., Goodwin, L., & Stansfeld, S. (2012). Family social support, community "social capital" and adolescents' mental health and educational outcomes: a longitudinal study in England. *Social Psychiatry & Psychiatric Epidemiology*, *47*, 697–709.

Sallah, D., Sashidharan, S. P., Stone, R., Struthers, J., & Blofeld, J. (2003). *Independent Inquiry into the death of David Bennett. An Independent Inquiry set up under HSG(94)27*. Cambridge: Norfolk, Suffolk and Cambridgeshire Strategic Health Authority.

Schaefer, C., Coyne, J. C., & Lazarus, R. S. (1981). The Health-Related Functions of Social Support. *Journal of Behavioral Medicine*, *4*(4), 381–406.

Schafer, J. L. (1999). Multiple imputation: a primer. *Statistical Methods in Medical Research*, *8*, 3–15.

Schomerus, G., & Angermeyer, M. C. (2008). Stigma and its impact on help-seeking for mental disorders: what do we know? *Epidemiologia E Psichiatria Sociale*, *17*(1), 31–37.

Scott Long, J. (1983). *Confirmatory Factor Analysis*. London: Sage Publications Ltd.

Scott Long, J., & Freese, J. (2014). *Regression Models for Categorical Dependent Variables using Stata*. College Station, TX: Stata Press.

Shefer, G., Rose, D., Nellums, L., Thornicroft, G., Henderson, C., & Evans-Lacko, S. (2013). "Our community is the worst": the influence of cultural beliefs on stigma, relationships with family and help-seeking in three ethnic communities in London. *The International Journal of Social Psychiatry*, *59*(6), 535–544.

Sheikh, S., & Furnham, A. (2012). The relationship between somatic expression, psychological distress and GP consultation in two cultural groups. *Counselling Psychology Quarterly*, *25*(4), 389–402.

Sherbourne, C. D. (1988). The Role of Social Support and Life Stress Events in Use of Mental Health Services. *Social Science & Medicine*, *27*(12), 1393–1400.

Simpson, L., & Jivraj, S. (2015). Why has ethnic diversity grown? In S. Jivraj & L. Simpson (Eds.), *Ethnic identity and inequalities in Britain* (pp. 33–47). Bristol: Policy Press.

Simpson, L., Jivraj, S., & Warren, J. (2014). The stability of ethnic group and religion in the Censuses of England and Wales 2011-2011. CoDE Working Paper March 2014. Manchester: Centre on Dynamics of Ethnicity. Retrieved from http://www.ethnicity.ac.uk/research/outputs/publications/working-papers/ [Accessed 7th August 2015]

Singh, S. P. (2007). Institutional racism in psychiatry: lessons from inquiries. *Psychiatric Bulletin, 31*, 363–365.

Singh, S. P., & Burns, T. (2006). Race and mental health: there is more to race than racism. *British Medical Journal, 333*, 648–651.

Singh, S. P., Burns, T., Tyrer, P., Islam, Z., Parsons, H., & Crawford, M. J. (2014). Ethnicity as a predictor of detention under the Mental Health Act. *Psychological Medicine, 44*, 997–1004.

Singleton, N., Bumpstead, R., O'Brien, M., Lee, A., & Meltzer, H. (2001). *Psychiatric morbidity among adults living in private households, 2000*. London: The Stationery Office.

Smaje, C., & Le Grand, J. (1997). Ethnicity, equity and the use of health services in the British NHS. *Social Science & Medicine, 45*(3), 485–496.

Smyth, N., Siriwardhana, C., Hotopf, M., & Hatch, S. L. (2015). Social networks, social support and psychiatric symptoms: social determinants and associations within a multicultural community population. *Social Psychiatry & Psychiatric Epidemiology, 50*(7), 1111–1120.

Soni Raleigh, V. (1996). Suicide patterns and trends in people of Indian subcontinent and Caribbean origin in England and Wales. *Ethnicity & Health, 1*(1), 55–63.

Soni Raleigh, V., & Balarajan, R. (1992). Suicide and self-burning among Indians and West Indians in England and Wales. *The British Journal of Psychiatry, 161*, 365–368.

Sonuga-Barke, E. J., & Mistry, M. (2000). The effect of extended family living on the mental health of three generations within two Asian communities. *The British Journal of Clinical Psychology, 39*, 129–141.

Sorbom, D. (1989). Model modification. *Psychometrika, 54*, 371–384.

Sosulski, M. R., & Woodward, A. T. (2013). African American Women Living with Mental Disorders: Factors Associated with Help Seeking from Professional Services and Informal Supports. *Social Work in Public Health, 28*, 660–671.

South Asia. (2015a). In Dictionary.com. Retrieved from http://dictionary.reference.com/browse/south-asia [Accessed 15th October 2015]

South Asia. (2015b). In Oxford Dictionaries. Retrieved from http://www.oxforddictionaries.com/definition/english/South-Asia [Accessed 15th October 2015]

Sproston, K., & Mindell, J. (2006). *Health Survey for England 2004: The health of minority ethnic groups* (Vol. 1). Leeds: The Information Centre.

Sproston, K., & Nazroo, J. (2002). *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC)*. London: The Stationery Office.

Sproston, K., Pitson, L., Whitfield, G., & Walker, E. (1999). *Health and lifestyle of the Chinese population in England*. London: Health Education Authority.

Sribney, W., & StataCorp. (2005). Likelihood ratio-test after survey/ robust ML estimation. Retrieved August 8, 2015, from http://www.stata.com/support/faqs/statistics/likelihood-ratio-test/

Stafford, M., Mcmunn, A., Zaninotto, P., & Nazroo, J. (2011). Positive and Negative Exchanges in Social Relationships as Predictors of Depression : Evidence From the English Longitudinal Study of Aging. *Journal of Aging and Health*, *23*(4), 607–628.

Stansfeld, S. A., Fuhrer, R., & Shipley, M. J. (1998). Types of social support as predictors of psychiatric morbidity in a cohort of British Civil Servants (Whitehall II Study). *Psychological Medicine*, *28*, 881–892.

Stansfeld, S. A., & Marmot, M. (1992). Deriving a survey measure of social support: the reliability and validity of the Close Persons Questionnaire. *Social Science & Medicine*, *35*, 1027–1035.

Stansfeld, S. A., & Sproston, K. (2002). Social support and networks. In K. Sproston & J. Nazroo (Eds.), *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC)* (pp. 117–134). London: The Stationery Office.

StataCorp. (2013). Stata Statistical Software: Release 13. College Station, TX: StataCorp LP.

Steiger, J. H., & Lind, J. C. (1980). Statistically-based tests for the number of common factors. Paper presented at the annual Spring Meeting of the Psychometric Society in Iowa City. May 30, 1980.

Sterne, J. A. C., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., … Carpenter, J. R. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *British Medical Journal*, *338:b2393*. http://doi.org/10.1136/bmj.b2393

Tabassum, R., Macaskill, A., & Ahmad, I. (2000). Attitudes Towards Mental Health in an Urban Pakistani Community in the United Kingdom. *International Journal of Social Psychiatry*, *46*(3), 170–181.

Taylor, S. E., & Seeman, T. E. (1999). Psychosocial Resources and the SES Health Relationship. *Annals of the New York Academy of Sciences*, *896*, 210–225.

Ten Have, M., Vollebergh, W., Bijl, R., & Ormel, J. (2002). Combined effect of mental disorder and low social support on care service use for mental health problems in the Dutch general population. *Psychological Medicine*, *32*(02), 311–323.

Thoits, P. A. (1982). Conceptual, Methodological, and Theoretical Problems in Studying Stress Social Support as a Buffer Against Life Stress. *Journal of Health and Social Behavior*, *23*(2), 145–159.

Thoits, P. A. (2011). Perceived Social Support and the Voluntary, Mixed, or Pressured Use of Mental Health Services. *Society and Mental Health*, *1*(1), 4–19.

Thomas, J., Brunton, J., & Graziosi, S. (2010). *EPPI-Reviewer 4: software for research synthesis. EPPI-Centre Software*. London: Social Science Research Institute, Institute of Education.

Thomas, J., Harden, A., Oakley, A., Oliver, S., Sutcliffe, K., Rees, R., … Kavanagh, J. (2004). Integrating qualitative research with trials in systematic reviews. *British Medical Journal*, *328*, 1010–1012.

Thornicroft, G. (2006). *Shunned: Discrimination against People with Mental Illness*. Oxford: Oxford University Press.

Thornicroft, G. (2008). Stigma and discrimination limit access to mental health care. *Epidemiologia E Psichiatria Sociale*, *17*(1), 14–19.

Time to Change. (2010). *Family matters: A report into attitudes towards mental health problems in the South Asian community in Harrow, North West London*. London: Time to Change.

Tucker, L. R., & Lewis, C. (1973). A Reliability Coefficient for Maximum Likelihood Factor Analysis. *Psychometrika*, *38*(1), 1–10.

Tudor Hart, J. (1971). The Inverse Care Law. *The Lancet*, *297*(7696), 405–412.

Turner, R. J., & Marino, F. (1994). Social Support and Social Structure: A Descriptive Epidemiology. *Journal of Health and Social Behavior*, *35*(3), 193–212.

Understanding Society. (2015). Data Linkage. Retrieved October 8, 2015, from https://www.understandingsociety.ac.uk/about/data-linkage

University of Essex. Institute for Social and Economic Research and NatCen Social Research. (2014). *Understanding Society: Waves 1-4, 2009-2013 [computer file]*. UK Data Service. Retrieved from http://dx.doi.org/10.5255/UKDA-SN-6614-6

Van Buuren, S., Boshuizen, H. C., & Knook, D. L. (1999). Multiple imputation of missing blood pressure covariates in survival analysis. *Statistics in Medicine*, *18*, 681–694.

VanderWeele, T. J. (2010). Bias formulas for sensitivity analysis for direct and indirect effects. *Epidemiology*, *21*(4), 540–551.

Vera, M., Alegría, M., Freeman, D. H., Robles, R., Pescosolido, B. A., & Peña, M. (1998). Help seeking for mental health care among poor Puerto Ricans: problem recognition, service use, and type of provider. *Medical Care*, *36*(7), 1047–1056.

Vermunt, J. K. (2010). Latent Class Modeling with Covariates: Two Improved Three-Step Approaches. *Political Analysis*, *18*, 450–469.

Vermunt, J. K., & Magidson, J. (2002). Latent Class Cluster Analysis. In J. A. Hagenaars & A. L. McCutcheon (Eds.), *Applied Latent Class Analysis*. Cambridge: Cambridge University Press.

Victor, C. R., Martin, W., & Zubair, M. (2012). Families and caring amongst older people in South Asian communities in the UK: a pilot study. *European Journal of Social Work*, *15*(1), 37–41.

Villatoro, A. P., & Aneshensel, C. S. (2014). Family Influences on the Use of Mental Health Services among African Americans. *Journal of Health and Social Behavior*, *55*(2), 161–180.

Villatoro, A. P., Morales, E. S., & Mays, V. M. (2014). Family Culture in Mental Health Help-Seeking and Utilization in a Nationally Representative Sample of Latinos in the United States: The NLAAS. *American Journal of Orthopsychiatry*, *84*(4), 353–363.

Walen, H. R., & Lachman, M. E. (2000). Social Support and Strain from Partner, Family, and Friends: Costs and Benefits for Men and Women in Adulthood. *Journal of Social and Personal Relationships*, *17*(1), 5–30.

Ware, J. E., Kosinski, M., Turner-Bowker, D. M., & Gandek, B. (2001). *How to Score Version 2 of the SF-12® Health Survey (With a Supplement Documenting Version 1)*. Lincoln, RI: QualityMetric Inc.

Webb-Johnson, A. (1995). *A cry for change*. London: Confederation of Indian Organisations.

Weich, S., McBride, O., Hussey, D., Exeter, D., Brugha, T., & McManus, S. (2011). Latent class analysis of co-morbidity in the Adult Psychiatric Morbidity Survey in England 2007: implications for DSM-5 and ICD-11. *Psychological Medicine*, *41*, 2201–2212.

Weich, S., & McManus, S. (2002). Common mental disorders. In K. Sproston & J. Nazroo (Eds.), *Ethnic Minority Psychiatric Illness Rates in the Community (EMPIRIC): Quantitative Report*. London: The Stationery Office.

Weich, S., Nazroo, J., Sproston, K., McManus, S., Blanchard, M., Erens, B., … Tyrer, P. (2004). Common mental disorders and ethnicity in England: the EMPIRIC study. *Psychological Medicine*, *34*(8), 1543–1551.

Wellman, B. (1999). *Networks in the Global Village: Life in Contemporary Communities*. Boulder, CO: Westview Press.

Werbner, P. (1979). *Ritual and social networks: a study of Pakistani immigrants in Manchester*. Unpublished doctoral dissertation, The University of Manchester.

Wethington, E., & Kessler, R. C. (1986). Perceived Support, Received Support, and Adjustment to Stressful Life Events. *Journal of Health and Social Behavior*, *27*(1), 78–89.

Willis, R., Price, D., & Glaser, K. (2013). Ethnicity as a Determining Factor for Instrumental Support in Mid and Later Life in England and Wales. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *68*(2), 278–289.

Wilson, M., & MacCarthy, B. (1994). GP consultation as a factor in the low rate of mental health service use by Asians. *Psychological Medicine*, *24*, 113–119.

Wing, J., Babor, T., Brugha, T., Burke, J., Cooper, J. E., Giel, R., … Sartorius, N. (1990). SCAN. Schedules for Clinical Assessment in Neuropsychiatry. *Archives of General Psychiatry*, *47*(6), 589–593.

Wong, S. T., Nordstokke, D., Grogorich, S., & Perez-Stable, E. J. (2010). Measurement of Social Support Across Women from Four Ethnic Groups: Evidence of Factorial Invariance. *Journal of Cross-Cultural Gerontology*, *25*, 45–58.

Wood, S. (2011). *Exploring experiences and meanings of self harm in South Asian women in the UK*. Unpublished doctoral dissertation, The University of Leeds, UK.

Woodward, A. T., Taylor, R. J., Neighbors, H. W., Chatters, L. M., & Jackson. (2008). The Use of Professional Services and Informal Support Among African Americans and Caribbean Blacks with a Mental Disorder. *Psychiatric Services*, *59*(11), 1292–1298.

World Health Organisation. (1994). *A User's Guide to the Self-Reporting Questionnaire (SRQ)*. Geneva: World Health Organisation.

World Health Organisation. (2014). *Social determinants of mental health*. Geneva: World Health Organisation.

Zaza, S., Wright-de Aguero, L. K., Briss, P. A., Truman, B. I., Hopkins, D. P., Hennessy, M. H., … Pappaioanou, M. (2000). Data Collection Instrument and Procedure for Systematic Reviews in the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, *18*(1), 44–74.

Zhang, W., & Ta, V. M. (2009). Social connections, immigration-related factors, and self-rated physical and mental health among Asian Americans. *Social Science & Medicine*, *68*(12), 2104–2112.

Appendices

Chapter 3 Appendices

Appendix 3.1: Critical Appraisal Tool for Quantitative Studies (adapted from Zaza et al., 2000)

1. Descriptions	Was the study population well described?
2. Sampling	a) Did the authors specify the sampling frame or universe of selection for the study population? b) Did the authors specify the screening criteria for study eligibility? c) Was the population that served as the unit of analysis the entire eligible population or a probability sample at the point of observation? d) Are there other selection bias issues not otherwise addressed?
3. Measurement	Were the outcome and other independent (or predictor) variables: • Valid • Reliable (consistent and reproducible)?
4. Data Analysis	a) Did the authors conduct appropriate statistical testing by: • Conducting statistical testing (when appropriate)? • Reporting which statistical tests were used? • Controlling for design effects in the statistical model? • Controlling for repeated measured in populations that were followed over time? • Using a model designed to hand multi-level data when they included group-level and individual covariates in the model? b) Are there other problems with the data analysis?
5. Interpretation of Results	a) Did at least 80% of enrolled participants complete the study? b) Did the authors correct for controllable variables or institute study procedures to limit bias appropriately (e.g. randomisation, restriction, matching, stratification, or statistical adjustment? c) Describe all potential biases or unmeasured/ contextual confounders described by the authors d) Describe other potential biases or unmeasured contextual confounders NOT identified by authors
6. Other	Other important limitation of the study not identified elsewhere

Appendix 3.2: CASP (Critical Appraisal Skills Programme) Qualitative Appraisal Checklist

Screening Questions	1. Was there a clear statement of the aims of the research question?
	2. Is a qualitative methodology appropriate?
Detailed Questions	3. Was the research design appropriate to address the aims of the research?
	4. Was the recruitment strategy appropriate to the aims of the research?
	5. Were the data collected in a way that addressed the research issue?
	6. Has the relationship between researcher and participants been adequately considered?
	7. Have ethical issues been taken into consideration?
	8. Was the data analysis sufficiently rigorous?
	9. Is there a clear statement of findings?
	10. How valuable is the research?

Appendix 3.3: CASP (Critical Appraisal Skills Programme) Systematic Review Checklist

Screening Questions	1. Did the review address a clearly focussed question
	2. Did the authors look for the appropriate sort of papers?
Detailed Questions	3. Do you think the important, relevant studies were included?
	4. Did the review's authors do enough to assess the quality of the included studies?
	5. If the results of the review have been combined, was it reasonable to do so?
	6. What are the overall results of the review?
	7. How precise are the results?
	8. Can the results be applied to the local population?
	9. Were all the important outcomes considered?
	10. Are the benefits worth the harms and costs?

Chapter 4 Appendices

Appendix 4.1: SF12 Questionnaire (Bold emphasis is that used in Understanding Society Wave 2)

Question	Answer categories
1. In general, would your say your health is?	Excellent Very good Good Fair Poor
The following questions are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so, how much? 2. **Moderate activities** such as moving a table, pushing a vacuum cleaner, bowling or playing golf? 3. Climbing **several** flights of stairs	Yes, limited a lot Yes, limited a little No, not limited at all
During the **past 4 weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of your physical health**? 4. **Accomplished less** that you would like 5. Were limited in the **kind** of work or other activities	All of the time Most of the time Some of the time A little of the time None of the time
During the **past 4 weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problem**s (such as feeling depressed or anxious)? 6. **Accomplished** less than you would like 7. Did work or other activities **less carefully than usual**?	All of the time Most of the time Some of the time A little of the time None of the time
8. During the **past 4 weeks**, how much did pain interfere with your normal work (including both work outside the home and housework)?	Not at all A little bit Moderately Quite a bit Extremely
These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling? How much of the time during the **past 4 weeks**… 9. Have you felt calm and peaceful? 10. Did you have a lot of energy? 11. Have you felt downhearted and depressed?	All of the time Most of the time Some of the time A little of the time None of the time
12. During the **past 4 weeks**, how much of the time has your **physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?	All of the time Most of the time Some of the time A little of the time None of the time

Appendix 4.2: General Health Questionnaire (GHQ12)

Questions	**Answer categories**
Here are some questions regarding the way you have been feeling over the last few weeks, For each question, please tick the box next to the answer that best describes the way you have felt. Have you recently…	
…been able to concentrate on whatever you're doing?	Better than usual Same as usual Less than usual Much less than usual
…lost much sleep over worry?	Not at all No more than usual Rather more than usual Much more than usual
…felt that you were playing a useful part in things?	More so than usual Same as usual Less so than usual Much less than usual
…felt capable of making decisions about things?	More so than usual Same as usual Less so than usual Much less capable
…felt constantly under strain?	Not at all No more than usual Rather more than usual Much more than usual
…felt you couldn't overcome your difficulties?	Not at all No more than usual Rather more than usual Much more than usual
…been able to enjoy your normal day-to-day activities?	More so than usual Same as usual Less so than usual Much less than usual
…been able to face up to problems?	More so than usual Same as usual Less able than usual Much less able
…been feeling unhappy or depressed?	Not at all No more than usual Rather more than usual Much more than usual
…been losing confidence in yourself?	Not at all No more than usual Rather more than usual Much more than usual
…been thinking of yourself as a worthless person?	Not at all No more than usual Rather more than usual Much more than usual
…been feeling reasonably happy, all things considered?	More so than usual About the same as usual Less so than usual Much less than usual

Appendix 4.3: Percent missing data for each of the social support questions relating to partners, friends and relatives

In relation to partner, how much…	**Pakistani**	**White British**	**White Irish**	**Indian**	**Bangladeshi**	**Black Caribbean**	**Black African**	**Total**
…do they really understand the way you feel about things?	1.0	0.7	1.5	0.5	2.4	0.0	1.3	0.7
…can you rely on them if you have a serious problem?	0.4	0.6	0.8	0.2	2.4	0.0	1.5	0.6
…can you open up to them if you need to talk about your	0.4	0.6	0.4	0.5	2.4	0.0	0.8	0.6
…do they criticise you?	1.0	0.7	0.8	1.0	2.8	0.3	1.0	0.7
…do they let you down when you are counting on them?	0.6	0.7	0.4	0.7	3.3	0.3	1.0	0.7
…do they get on your nerves?	0.8	0.7	0.8	1.0	2.8	0.3	1.3	0.7
In relation to relatives, how much…	**Pakistani**	**White British**	**White Irish**	**Indian**	**Bangladeshi**	**Black Caribbean**	**Black African**	**Total**
…do they really understand the way you feel about things?	1.0	1.3	0.8	1.4	0.9	3.9	3.5	1.4
…can you rely on them if you have a serious problem?	1.2	1.0	0.8	1.4	0.9	3.1	3.0	1.1
…can you open up to them if you need to talk about your	1.5	1.1	1.1	1.4	0.9	4.2	3.3	1.2
…do they criticise you?	1.2	1.6	1.1	1.4	1.4	3.9	3.3	1.7
…do they let you down when you are counting on them?	1.2	1.4	0.8	1.9	0.9	3.9	3.5	1.5
…do they get on your nerves?	1.5	1.3	1.5	1.4	1.4	4.5	3.0	1.4
In relation to friends, how much…	**Pakistani**	**White British**	**White Irish**	**Indian**	**Bangladeshi**	**Black Caribbean**	**Black African**	**Total**
…do they really understand the way you feel about things?	0.7	0.9	1.1	0.4	1.4	2.9	2.3	1.0
…can you rely on them if you have a serious problem?	1.0	0.9	1.1	0.8	1.9	2.9	2.8	1.0
…can you open up to them if you need to talk about your	1.0	0.9	1.1	0.8	1.9	2.9	2.8	1.0
…do they criticise you?	1.0	1.6	2.3	1.5	0.9	4.2	2.8	1.7
…do they let you down when you are counting on them?	1.0	1.2	1.9	0.4	1.4	3.1	2.8	1.3
…do they get on your nerves?	1.0	1.1	1.5	1.2	1.4	3.1	3.3	1.2

Appendix 4.4: Support from partner by ethnic group (weighted percentage). Unweighted Total ranges from 16,748 to 16,774 due to differing levels of missing data.

In relation to partner, how much…	Pakistani	White British	White Irish	Indian	Bangladeshi	Black Caribbean	Black African	Total
…do they really understand the way you feel about things?								
A lot	25.8	28.5	26.4	33.6	24.7	10.3	24.3	28.3
Somewhat	21.6	23.5	23.3	26.5	25.3	19.2	15.0	23.4
A little	7.7	8.2	5.6	6.3	7.3	5.0	4.2	8.1
Not at all	2.3	1.8	2.3	3.3	5.9	2.3	1.7	1.9
No partner	42.7	38.0	42.4	30.3	36.8	63.1	54.8	38.4
…can you rely on them if you have a serious problem?								
A lot	36.5	51.1	42.9	49.3	34.7	22.5	31.7	50.2
Somewhat	12.1	7.1	9.0	14.0	13.9	7.4	9.5	7.4
A little	6.4	2.7	5.7	4.6	7.4	5.0	2.7	2.9
Not at all	2.6	1.1	0.2	2.0	7.2	2.0	1.3	1.1
No partner	42.5	38.0	42.2	30.1	36.8	63.1	54.8	38.4
…can you open up to them if you need to talk about your worries?								
A lot	30.1	39.6	36.7	42.7	28.9	18.7	31.0	39.2
Somewhat	17.4	14.7	16.6	19.8	18.4	10.1	10.3	14.8
A little	7.8	6.0	3.3	5.0	9.2	5.4	3.2	5.9
Not at all	2.2	1.7	1.4	2.4	6.7	2.7	1.2	1.7
No partner	42.5	38.0	42.1	30.1	36.8	63.1	54.4	38.4
…do they criticise you?								
A lot	5.1	2.8	2.2	7.5	8.0	5.1	5.0	3.0
Somewhat	14.4	9.0	8.6	17.8	9.7	6.2	12.4	9.2
A little	20.2	29.4	24.6	30.6	21.8	15.6	19.2	29.0
Not at all	17.6	20.7	22.5	14.0	23.5	9.9	8.8	20.4
No partner	42.8	38.0	42.2	30.3	37.0	63.2	54.6	38.4
…do they let you down when you are counting on them?								
A lot	4.4	1.9	2.9	5.0	9.5	3.9	4.0	2.1
Somewhat	11.1	4.6	6.9	12.3	11.1	4.7	5.2	4.8
A little	21.0	16.0	15.7	23.4	19.9	12.9	14.5	16.2
Not at all	20.9	39.5	32.4	29.0	22.6	15.3	21.8	38.5
No partner	42.8	38.0	42.1	30.2	37.0	63.2	54.6	38.4
…do they get on your nerves?								
A lot	6.7	2.9	4.2	4.8	10.6	4.5	4.4	3.1
Somewhat	10.8	6.4	8.9	11.9	10.7	5.5	10.1	6.7
A little	22.2	35.8	31.9	34.8	27.5	19.7	22.7	35.3
Not at all	17.5	16.8	12.8	18.3	14.3	7.0	8.2	16.6
No partner	42.8	38.0	42.2	30.3	36.9	63.3	54.7	38.4

Appendix 4.5: Support from relatives by ethnic group (weighted percentage). Unweighted Total ranges from 16,589 to 16,689 due to differing levels of missing data.

In relation to relatives, how much…	Pakistani	White British	White Irish	Indian	Bangladeshi	Black Caribbean	Black African	Total
…do they really understand the way you feel about things?								
A lot	36.9	30.8	30.4	37.6	40.5	29.3	40.8	31.1
Somewhat	35.9	41.8	46.4	42.9	31.5	37.1	34.1	41.6
A little	19.7	20.3	18.2	12.5	15.3	23.1	15.3	20.1
Not at all	3.6	5.5	4.3	4.4	4.0	8.4	6.0	5.5
No immediate family	4.0	1.6	0.8	2.7	8.8	2.1	3.8	1.7
…can you rely on them if you have a serious problem?								
A lot	55.0	66.4	62.0	58.0	56.4	54.2	52.5	65.7
Somewhat	24.1	18.4	21.6	23.3	18.5	22.8	24.4	18.7
A little	11.4	9.9	11.8	10.5	12.2	15.4	11.0	10.0
Not at all	5.4	3.7	3.9	5.4	4.1	5.6	8.3	3.8
No immediate family	4.0	1.6	0.8	2.7	8.7	2.1	3.8	1.7
…can you open up to them if you need to talk about your worries?								
A lot	40.8	44.4	50.6	42.2	45.0	36.2	43.8	44.3
Somewhat	29.3	30.2	24.3	32.0	22.6	35.1	27.6	30.1
A little	19.0	17.5	19.7	15.6	17.4	19.6	17.3	17.5
Not at all	6.9	6.4	4.6	7.5	6.2	7.0	7.5	6.4
No immediate family	4.0	1.6	0.8	2.7	8.7	2.1	3.8	1.7
…do they criticise you?								
A lot	9.4	4.2	2.3	7.1	5.6	8.3	11.1	4.4
Somewhat	17.4	12.6	13.6	19.0	11.5	19.6	22.0	13.0
A little	39.6	43.5	41.8	42.9	39.8	36.8	36.4	43.3
Not at all	29.6	38.1	41.5	28.3	34.3	33.2	26.7	37.7
No immediate family	4.0	1.6	0.8	2.7	8.8	2.1	3.8	1.7
…do they let you down when you are counting on them?								
A lot	9.7	3.5	3.6	5.7	6.5	6.4	7.8	3.8
Somewhat	12.9	7.9	7.7	15.6	12.7	16.9	13.3	8.3
A little	31.9	25.6	31.0	30.2	32.8	30.2	30.4	25.9
Not at all	41.6	61.4	56.8	45.8	39.3	44.4	44.8	60.4
No immediate family	4.0	1.6	0.8	2.7	8.7	2.1	3.8	1.7
…do they get on your nerves?								
A lot	11.1	4.1	6.3	7.2	7.9	8.9	9.8	4.4
Somewhat	18.3	10.9	11.3	12.7	15.1	19.9	23.5	11.2
A little	41.6	50.4	51.0	44.9	40.2	46.6	43.1	50.0
Not at all	25.1	33.1	30.3	32.5	28.1	22.6	19.8	32.7
No immediate family	4.0	1.6	0.8	2.7	8.8	2.1	3.8	1.7

Appendix 4.6: Support from friends by ethnic group (weighted percentage). Unweighted Total ranges from 16,588 to 16,722 due to differing levels of missing data.

In relation to friends, how much…	Pakistani	White British	White Irish	Indian	Bangladeshi	Black Caribbean	Black African	Total
…do they really understand the way you feel about things?								
A lot	46.7	37.1	42.6	39.5	38.8	39.3	35.5	37.4
Somewhat	34.9	41.9	40.1	41.6	40.5	36.8	41.2	41.7
A little	10.9	15.8	13.9	13.6	10.4	17.9	16.3	15.7
Not at all	0.5	2.0	0.4	0.7	1.2	2.4	3.9	2.0
No friends	7.0	3.2	3.0	4.6	9.0	3.6	3.2	3.3
…can you rely on them if you have a serious problem?								
A lot	42.6	51.3	51.4	37.5	38.1	40.6	35.0	50.7
Somewhat	30.7	29.3	34.9	36.0	31.7	34.3	32.8	29.6
A little	16.0	13.5	10.1	19.3	16.3	17.1	24.8	13.7
Not at all	3.7	2.7	0.7	2.6	5.0	4.4	4.3	2.7
No friends	7.0	3.2	2.9	4.6	9.0	3.5	3.2	3.3
…can you open up to them if you need to talk about your worries?								
A lot	44.7	47.1	53.5	41.5	42.1	42.9	34.3	46.8
Somewhat	28.6	31.0	27.6	31.1	31.8	34.3	33.9	31.0
A little	16.4	15.7	12.9	19.8	14.4	14.8	22.9	15.8
Not at all	3.3	3.0	3.0	3.1	2.7	4.5	5.7	3.0
No friends	7.0	3.1	2.9	4.6	9.0	3.6	3.2	3.3
…do they criticise you?								
A lot	4.0	1.3	1.9	1.6	2.7	2.4	6.7	1.4
Somewhat	14.9	5.2	6.5	12.3	11.0	11.5	21.7	5.7
A little	31.5	33.8	38.3	3.8	27.2	38.6	40.5	34.0
Not at all	12.7	46.5	50.3	43.9	50.1	43.9	27.9	55.5
No friends	7.0	3.2	3.0	4.7	9.0	3.6	3.2	3.3
…do they let you down when you are counting on them?								
A lot	6.0	2.9	3.1	2.8	4.5	2.8	7.3	3.0
Somewhat	16.0	7.2	7.0	17.0	14.9	16.4	19.9	7.7
A little	31.5	31.6	30.2	35.0	27.5	4.3	34.5	31.8
Not at all	39.5	55.0	56.7	40.6	44.0	34.7	35.1	54.2
No friends	7.0	3.2	3.0	4.6	9.1	3.6	3.2	3.3
…do they get on your nerves?								
A lot	5.4	1.2	1.7	2.0	3.3	1.0	5.2	1.3
Somewhat	11.5	5.2	7.6	10.9	11.4	9.0	19.9	5.6
A little	34.9	45.2	47.6	37.5	36.9	49.0	46.2	45.0
Not at all	41.2	45.3	40.1	45.0	39.5	37.4	25.5	44.8
No friends	7.0	3.2	3.0	4.6	9.1	3.6	3.2	3.3

Appendix 4.7: Item Response Probabilities conditional on being a member of a latent class, for 4 class solution (n=16,874)

Item	Class 1 Well supported	Class 2 Single and supported	Class 3 Inadequately supported	Class 4 Socially isolated
Partner understand				
A lot	0.673	<0.001	0.251	0.216
Somewhat	0.302	<0.001	0.461	0.158
A little	0.023	<0.001	0.233	0.087
Not at all	0.002	<0.001	0.055	0.035
No partner	<0.001	>0.999	<0.001	0.503
Partner rely				
A lot	0.972	<0.001	0.669	0.354
Somewhat	0.024	<0.001	0.212	0.075
A little	0.002	<0.001	0.087	0.048
Not at all	0.001	<0.001	0.033	0.021
No partner	<0.001	>0.999	<0.001	0.502
Partner open up				
A lot	0.855	<0.001	0.428	0.263
Somewhat	0.134	<0.001	0.346	0.110
A little	0.010	<0.001	0.173	0.093
Not at all	0.001	<0.001	0.052	0.032
No partner	<0.001	>0.999	<0.001	0.503
Partner criticise				
A lot	0.009	<0.001	0.084	0.046
Somewhat	0.085	<0.001	0.212	0.081
A little	0.453	<0.001	0.493	0.205
Not at all	0.452	<0.001	0.211	0.165
No partner	<0.001	>0.999	<0.001	0.503
Partner let down				
A lot	0.011	<0.001	0.055	0.027
Somewhat	0.012	<0.001	0.141	0.056
A little	0.121	<0.001	0.403	0.128
Not at all	0.856	<0.001	0.402	0.286
No partner	<0.001	>0.999	<0.001	0.504

Appendix 4.7 (continued): Item Response Probabilities conditional on being a member of a latent class, for 4 class solution (n=16,874)

Item	Class 1 Well supported	Class 2 Single and supported	Class 3 Inadequately supported	Class 4 Socially isolated
Partner annoy				
A lot	0.004	<0.001	0.091	0.044
Somewhat	0.027	<0.001	0.183	0.083
A little	0.549	<0.001	0.602	0.244
Not at all	0.419	<0.001	0.124	0.127
No partner	<0.001	>0.999	<0.001	0.502
Relatives understand				
A lot	0.445	0.369	0.130	0.186
Somewhat	0.476	0.385	0.430	0.205
A little	0.077	0.186	0.343	0.186
Not at all	0.002	0.061	0.097	0.074
No relatives	<0.001	<0.001	<0.001	0.349
Relatives rely				
A lot	0.874	0.715	0.419	0.377
Somewhat	0.106	0.152	0.319	0.129
A little	0.016	0.093	0.192	0.095
Not at all	0.003	0.040	0.069	0.051
No relatives	<0.001	<0.001	<0.001	0.347
Relatives open up				
A lot	0.637	0.504	0.211	0.250
Somewhat	0.304	0.266	0.363	0.157
A little	0.056	0.159	0.314	0.157
Not at all	0.004	0.070	0.112	0.087
No relatives	<0.001	<0.001	<0.001	0.348
Relatives criticise				
A lot	0.004	0.065	0.059	0.042
Somewhat	0.049	0.175	0.158	0.111
A little	0.410	0.421	0.497	0.250
Not at all	0.538	0.339	0.286	0.246
No relatives	<0.001	<0.001	<0.001	0.350

Appendix 4.7 (continued): Item Response Probabilities conditional on being a member of a latent class, for 4 class solution (n=16,874)

Item	Class 1 Well supported	Class 2 Single and supported	Class 3 Inadequately supported	Class 4 Socially isolated
Relatives let down				
A lot	0.011	0.039	0.060	0.040
Somewhat	0.019	0.087	0.139	0.090
A little	0.136	0.235	0.422	0.194
Not at all	0.834	0.640	0.379	0.326
No relatives	<0.001	<0.001	<0.001	0.351
Relatives annoy				
A lot	0.001	0.057	0.069	0.054
Somewhat	0.024	0.135	0.173	0.107
A little	0.517	0.460	0.571	0.265
Not at all	0.458	0.348	0.187	0.224
No relatives	<0.001	<0.001	<0.001	0.351
Friends understand				
A lot	0.461	0.446	0.239	0.135
Somewhat	0.453	0.390	0.460	0.142
A little	0.082	0.142	0.266	0.038
Not at all	0.004	0.022	0.035	0.006
No Friends	<0.001	<0.001	<0.001	0.680
Friends rely				
A lot	0.677	0.552	0.334	0.194
Somewhat	0.257	0.283	0.386	0.077
A little	0.061	0.133	0.234	0.039
Not at all	0.004	0.032	0.046	0.012
No Friends	<0.001	<0.001	<0.001	0.678
Friends open up				
A lot	0.593	0.535	0.315	0.162
Somewhat	0.308	0.289	0.372	0.097
A little	0.092	0.141	0.263	0.052
Not at all	0.008	0.035	0.050	0.011
No Friends	<0.001	<0.001	<0.001	0.678

Appendix 4.7 (continued): Item Response Probabilities conditional on being a member of a latent class, for 4 class solution (n=16,874)

Item	Class 1 Well supported	Class 2 Single and supported	Class 3 Inadequately supported	Class 4 Socially isolated
Friends criticise				
A lot	0.003	0.020	0.018	0.013
Somewhat	0.020	0.084	0.065	0.046
A little	0.270	0.390	0.388	0.100
Not at all	0.708	0.507	0.528	0.161
No Friends	<0.001	<0.001	<0.001	0.680
Friends let down				
A lot	0.020	0.035	0.036	0.013
Somewhat	0.027	0.097	0.111	0.031
A little	0.198	0.337	0.452	0.081
Not at all	0.754	0.531	0.400	0.191
No Friends	<0.001	<0.001	0.000	0.683
Friends annoy				
A lot	0.001	0.017	0.020	0.012
Somewhat	0.015	0.077	0.075	0.040
A little	0.402	0.447	0.555	0.113
Not at all	0.582	0.459	0.350	0.154
No Friends	<0.001	<0.001	<0.001	0.682

Chapter 5 Appendices

Appendix 51: Polychoric correlation matrix for scores for First Closest Person from Close Persons Questionnaire (n=2,260)

	1. Give you info…?	2. Rely on this person?	3. Make you feel good…?	4. Share interests, hobbies...?	5. Give you worries …?	6. Confide in this person?	7. Trust this person with most personal..?	8. Liked to have confided more…?	9. Talking make things worse?	10. Practical help major things?	11. Liked more practical help…?	12. Practical help small things?
1. Give you information, suggestions & guidance?	1.000											
2. Rely on this person?	0.629	1.000										
3. Make you feel good about yourself?	0.568	0.561	1.000									
4. Share interests, hobbies with person?	0.376	0.425	0.427	1.000								
5. Give you worries, problems and stress?	-0.099	-0.066	-0.149	0.037	1.000							
6. Confide in this person?	0.517	0.452	0.423	0.354	-0.033	1.000						
7. Trust this person with most personal worries?	0.465	0.468	0.428	0.344	-0.004	0.592	1.000					
8. Liked to have confided more in this person?	-0.087	-0.174	-0.135	-0.090	0.060	-0.161	-0.142	1.000				
9. Talking to this person make things worse?	-0.192	-0.248	-0.272	-0.106	0.404	-0.129	-0.174	0.272	1.000			
10. Practical help with major things?	0.382	0.360	0.260	0.267	-0.076	0.394	0.309	0.010	0.024	1.000		
11. Liked more practical help with major things from person?	-0.098	-0.224	-0.177	-0.075	0.082	-0.109	-0.136	0.493	0.332	0.190	1.000	
12. Practical help with small things?	0.291	0.329	0.227	0.332	-0.049	0.276	0.249	-0.062	-0.009	0.578	0.122	1.000

Appendix 5.2: Factor loadings from 3 factor model of scores for First Closest Person

There were high loadings from items measuring negative aspects of support, for the Practical Support Factor (shaded in grey).

Close Persons Questionnaire Items	**Factor1**	**Factor2**	**Factor3**
	Confiding & Emotional Support	Practical Support	Negative Aspects of Support
1. Give you information, suggestions & guidance?	0.738	0.043	0.023
2. Rely on this person?	0.753	-0.056	0.044
3. Make you feel good about yourself?	0.683	-0.105	-0.004
4. Share interests, hobbies with person?	0.541	0.085	0.097
5. Give you worries, problems and stress?	-0.137	0.232	0.461
6. Confide in this person?	0.677	0.064	0.152
7. Trust this person with most personal worries?	0.649	0.009	0.180
8. Liked to have confided more in this person?	-0.237	0.456	-0.057
9. Talking to this person make things worse?	-0.303	0.484	0.301
10. Give you practical help with major things?	0.525	0.440	-0.209
11. Liked more practical help with major things from person?	-0.205	0.623	-0.128
12. Give you practical help with small things?	0.471	0.360	-0.204

Appendix 5.3: Polychoric correlation matrix for scores for Second Closest Person from Close Persons Questionnaire (n=2,260)

	1. Give you info…?	2. Rely on this person?	3. Make you feel good…?	4. Share interests, hobbies...?	5. Give you worries…?	6. Confide in this person?	7. Trust this person with most personal..?	8. Liked to have confided more…?	9. Talking make things worse?	10. Practical help major things?	11. Liked more practical help…?	12. Practical help small things?
1. Give you information, suggestions & guidance?	1.000											
2. Rely on this person?	0.606	1.000										
3. Make you feel good about yourself?	0.561	0.560	1.000									
4. Share interests, hobbies with person?	0.357	0.354	0.444	1.000								
5. Give you worries, problems and stress?	-0.109	-0.055	-0.083	0.104	1.000							
6. Confide in this person?	0.516	0.411	0.429	0.373	0.063	1.000						
7. Trust this person with most personal worries?	0.468	0.471	0.452	0.311	-0.006	0.604	1.000					
8. Liked to have confided more in this person?	0.023	-0.100	-0.065	0.019	0.129	-0.004	0.007	1.000				
9. Talking to this person make things worse?	-0.072	-0.143	-0.188	-0.032	0.514	0.007	-0.069	0.374	1.000			
10. Practical help with major things?	0.394	0.382	0.215	0.250	0.035	0.355	0.276	0.173	0.102	1.000		
11. Liked more practical help with major things from person?	0.030	-0.116	-0.091	-0.039	0.131	0.027	-0.038	0.544	0.394	0.345	1.000	
12. Practical help with small things?	0.327	0.339	0.211	0.326	0.063	0.266	0.190	0.119	0.095	0.662	0.278	1.000

Appendix 5.4: Logistic regression model of usage of secondary services (Unweighted n=2,260)

	Used secondary care mental health services		
	OR	**95% CI**	**P value**
Ethnic group			
Pakistani (ref.)	1.00	-	-
White	8.23	1.45 – 46.7	0.017
White Irish	12.86	2.14 – 77.3	0.005
Black Caribbean	9.15	1.95 – 43.0	0.005
Bangladeshi	0.90	0.20 – 4.17	0.895
Indian	2.39	0.41 – 14.1	0.334

*Adjusted for age, CIS-R score, marital status, household equivalised income and employment status, network size, network content, network contact and network support.

Appendix 5.5: The association between social network characteristics and mental health service usage: logistic regression models. Values are odds ratios (95% confidence intervals) (Unweighted n=2,260)

	Model 4a*: Network Support		Model 4b*: Network Contact		Model 4c*: Network Content		Model 4d*: Network Size	
	OR (95% CI)	**P value**	**OR (95% CI)**	**P value**	**OR (95% CI)**	**P value**	**OR (95% CI)**	**P value**
Ethnic group								
Pakistani (ref.)[a]	1.00	-	1.00	-	1.00	-	1.00	-
White	3.66 (1.47 – 9.13)	0.005	3.24 (1.24 – 8.44)	0.016	3.81 (1.48 – 9.82)	0.006	3.72 (1.48 – 9.82)	0.005
White Irish	4.73 (1.87 – 11.9)	0.001	4.34 (1.65 – 11.5)	0.003	4.94 (1.89 – 12.9)	0.001	5.05 (1.89 – 12.9)	0.001
Black Caribbean	3.12 (1.27 – 7.68)	0.013	2.48 (0.99 – 6.19)	0.053	3.11 (1.24 – 7.74)	0.015	3.04 (1.24 – 7.74)	0.015
Bangladeshi	0.91 (0.39 – 2.12)	0.824	1.02 (0.43 – 2.45)	0.964	1.15 (0.49 – 2.71)	0.749	1.24 (0.49 – 2.71)	0.620
Indian	2.32 (1.05 – 5.13)	0.038	2.20 (0.95 – 5.08)	0.065	2.43 (1.07 – 5.52)	0.034	2.55 (1.07 – 5.52)	0.027
Network Support								
Positive aspects of support	0.99 (0.66 – 1.48)	0.948						
Inadequate support	1.79 (1.10 – 2.92)	0.020						
Network Contact								
Contact with relatives								
No frequent contact (ref.)			1.00	-				
Frequent contact			0.42 (0.22 – 0.82)	0.011				
No relatives outside the house			0.19 (0.03 – 1.04)	0.055				
Contact with friends								
No frequent contact (ref.)			1.00	-				
Frequent contact			0.95 (0.48 – 1.90)	0.888				
No friends			0.41 (0.08 – 2.16)	0.292				
Network Content								
Spouse and relative (ref.)					1.00	-		
Spouse & Friend					0.50 (0.16 – 1.60)	0.245		
Friend & Relative					0.54 (0.14 – 2.13)	0.381		
Relatives					0.93 (0.25 – 3.47)	0.916		
Friends					0.89 (0.10 – 8.28)	0.918		
0 or 1 close person					0.50 (0.15 – 1.68)	0.263		
Network Size								
0 to 2 (ref.)							1.00	-
3 to 7							2.28 (0.95 – 5.48)	0.064
8 or more							0.93 (0.28 – 3.06)	0.908

*Adjusted for age, CIS-R score, marital status, household equivalised income and employment status

[a] Reference category

Appendix 5.6: Regression results for association between being born outside the UK and mental health services, Pakistani women only.
Values are odds ratios (95% confidence intervals). Unweighted n =376

	OR (95% CI)	P value
Foreign born status		
Born in the UK (ref.)	1.00	-
Not born in the UK	0.27 (0.08 – 0.94)	0.040
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	1.21 (0.39 – 3.79)	0.745
55 to 74	0.37 (0.03 – 4.72)	0.444
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	6.79 (2.63 – 17.6)	<0.001
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.36 (0.65 – 2.21)	0.270
Single	0.39 (0.07 – 2.08)	0.271
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.32 (0.06 – 1.65)	0.222
3	0.88 (0.15 – 5.22)	0.951
4 & 5[#]	1.54 (0.11 – 20.7)	0.842
Missing	0.28 (0.09 – 0.94)	0.099
Employment Status		
Employed (ref.)	1.00	-
Unemployed	3.64 (0.55 – 24.3)	0.182
Looking after home or family	1.31 (0.30 – 5.73)	0.717
Full time student	0.17 (0.02 – 1.55)	0.116
Other Economically inactive or Retired*	0.91 (0.07 – 11.0)	0.938
Network Support		
Positive aspects of support	0.94 (0.50 – 1.79)	0.844
Inadequate support	1.48 (0.82 – 2.68)	0.193
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.54 (0.19 – 1.51)	0.238
No extra-household relatives	2.16 (0.46 – 10.1)	0.326
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	1.42 (0.45 – 4.44)	0.586
No friends	1.20 (0.35 – 4.09)	0.734
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	7.83 (1.12 – 54.8)	0.038
Friend & Relative, or Friends[+]	0.64 (0.06 – 6.27)	0.699
Relatives	2.17 (0.59 – 8.03)	0.247
0 or 1 close person	10.7 (1.18 – 97.6)	0.035
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	7.53 (1.27 – 44.5)	0.026
8 or more	18.5 (2.40 – 142.6)	0.005

[#]The two highest quintiles (4 and 5) were amalgamated because there were very few Pakistani women in the highest quintile.
*Retired and Other Economically inactive categories were amalgamated because very few women were retired
[+]Friend and Relative, and Friends category amalgamated because very few women had only friends as their closest people.

Appendix 5.7: Regression results for association between social networks and mental health service use, with interaction between inadequate support and mental illness (Model 7a). Values are odds ratios (95% confidence intervals). Unweighted n =2,260

	OR (95% CI)	P value
Ethnic group		
Pakistani (ref.)[a]	1.00	-
White	4.58 (1.68 – 12.5)	0.003
White Irish	5.85 (2.12 – 16.1)	0.001
Black Caribbean	3.43 (1.30 – 9.04)	0.013
Bangladeshi	0.96 (0.37 – 2.49)	0.938
Indian	2.71 (1.09 – 6.74)	0.032
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.90 (0.36 – 2.24)	0.822
55 to 74	0.56 (0.12 – 2.56)	0.457
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	61.0 (5.61 – 662.4)	<0.001
*CIS-R Score*Inadequate Support*		
12-44*Inadequate Support	0.39 (0.16 – 0.96)	0.040
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.81 (0.23 – 2.87)	0.646
Single	0.68 (0.16 – 2.88)	0.844
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.55 (0.18 – 1.69)	0.295
3	1.47 (0.56 – 3.91)	0.435
4	0.73 (0.25 – 2.09)	0.553
Quintile 5 (Highest)	0.27 (0.06 – 1.32)	0.105
Missing	1.33 (0.35 – 5.00)	0.673
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.40 (0.11 – 1.41)	0.152
Retired	1.02 (0.19 – 5.45)	0.981
Looking after home or family	1.44 (0.60 – 3.49)	0.417
Full time student	3.48 (0.69 – 17.5)	0.131
Other Economically inactive	4.20 (1.24 – 14.3)	0.021
Network Support		
Positive aspects of support	0.84 (0.53 – 1.32)	0.451
Inadequate support	3.12 (1.58 – 6.16)	0.001
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.44 (0.23 – 0.85)	0.015
No extra-household relatives	0.18 (0.03 – 1.15)	0.070
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.92 (0.44 – 1.95)	0.833
No friends	0.23 (0.04 – 1.21)	0.084
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.42 (0.14 – 1.26)	0.123
Friend & Relative	0.76 (0.17 – 3.35)	0.718
Relatives	1.69 (0.38 – 7.54)	0.490
Friends	1.37 (0.09 – 19.5)	0.814
0 or 1 close person	0.60 (0.15 – 2.45)	0.475
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	1.57 (0.56 – 4.36)	0.390
8 or more	0.66 (0.20 – 2.13)	0.485

[a]Reference category

Appendix 5.8: Regression results for association between social networks and mental health service use, with interaction between contact with relatives and mental illness (Model 7b). Values are odds ratios (95% confidence intervals). Unweighted n =2,260

	OR (95% CI)	P value
Ethnic group		
Pakistani (ref.)[a]	1.00	-
White	4.22 (1.51 – 11.9)	0.006
White Irish	5.39 (2.00 – 14.5)	0.001
Black Caribbean	3.41 (1.31 – 8.84)	0.012
Bangladeshi	1.13 (0.44 – 2.94)	0.798
Indian	2.71 (1.11 – 6.63)	0.029
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.92 (0.36 – 2.37)	0.863
55 to 74	0.59 (0.12 – 2.81)	0.508
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	6.82 (2.35 – 19.7)	<0.001
*CIS-R Score*Contact with Relatives*		
12-44* Frequent Contact with Relatives	0.67 (0.16 – 2.82)	0.580
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.99 (0.30 – 3.29)	0.989
Single	0.72 (0.17 – 2.98)	0.646
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.66 (0.21 – 2.04)	0.471
3	1.73 (0.60 – 5.01)	0.307
4	0.92 (0.33 – 2.59)	0.880
Quintile 5 (Highest)	0.33 (0.06 – 1.83)	0.203
Missing	1.70 (0.48 – 5.99)	0.406
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.55 (0.17 – 1.75)	0.305
Retired	1.00 (0.19 – 5.22)	>0.999
Looking after home or family	1.58 (0.66 – 3.82)	0.305
Full time student	2.29 (0.38 – 13.6)	0.363
Other Economically inactive	6.50 (1.72 – 24.6)	0.006
Network Support		
Positive aspects of support	0.94 (0.60 – 1.46)	0.784
Inadequate support	1.99 (1.16 – 3.40)	0.012
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.65 (0.27 – 1.54)	0.324
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.88 (0.42 – 1.87)	0.749
No friends	0.63 (0.04 – 1.94)	0.190
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.49 (0.16 – 1.48)	0.204
Friend & Relative	0.71 (0.17 – 2.88)	0.632
Relatives	1.61 (0.40 – 6.50)	0.500
Friends	1.21 (0.12 – 11.8)	0.868
0 or 1 close person	0.71 (0.16 – 3.23)	0.656
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	1.92 (0.64 – 5.76)	0.243
8 or more	0.91 (0.24 – 3.44)	0.893

[a]Reference category

Appendix 5.9: Regression results for association between social networks and mental health service use, with interaction between ethnic group and mental illness (Model 7c). Values are odds ratios (95% confidence intervals). Unweighted n =2,260

	OR (95% CI)	P value
Ethnic group		
Pakistani (ref.)[a]	1.00	-
White	4.27 (1.40 – 13.0)	0.011
White Irish	6.50 (2.16 – 19.5)	0.001
Black Caribbean	3.11 (1.05 – 9.19)	0.040
Bangladeshi	1.91 (0.63 – 5.78)	0.255
Indian	3.59 (1.27 – 10.2)	0.016
Age in years		
16 to 34 (ref.)	1.00	-
35 to 54	0.89 (0.34 – 2.33)	0.816
55 to 74	0.58 (0.12 – 2.86)	0.507
CIS-R Score		
0-11 (ref.)	1.00	-
12-44	6.19 (2.19 – 18.1)	<0.001
*Ethnic Group*CIS-R Score*		
White*12-44	0.99 (0.26 – 3.86)	0.991
White Irish*12-44	0.58 (0.14 – 2.38)	0.450
Black Caribbean*12-44	1.14 (0.28 – 4.68)	0.857
Bangladeshi*12-44	0.13 (0.02 – 0.92)	0.041
Indian*12-44	0.51 (0.11 – 2.39)	0.393
Marital status		
Married (ref.)	1.00	-
Separated/ Divorced/ Widowed	0.92 (0.26 – 3.25)	0.900
Single	0.72 (0.17 – 2.98)	0.646
Household Equivalised Income		
Quintile 1 (Lowest) (ref.)	1.00	-
2	0.62 (0.21 – 2.04)	0.414
3	1.53 (0.60 – 5.01)	0.424
4	0.80 (0.33 – 2.59)	0.684
Quintile 5 (Highest)	0.30 (0.06 – 1.83)	0.129
Missing	1.40 (0.48 – 5.99)	0.628
Employment Status		
Employed (ref.)	1.00	-
Unemployed	0.56 (0.17 – 1.82)	0.334
Retired	1.02 (0.20 – 5.35)	0.978
Looking after home or family	1.51 (0.62 – 3.73)	0.008
Full time student	3.15 (0.63 – 15.7)	0.362
Other Economically inactive	6.19 (1.60 – 23.9)	0.162
Network Support		
Positive aspects of support	0.93 (0.60 – 1.44)	0.747
Inadequate support	1.92 (1.13 – 3.26)	0.016
Contact with relatives		
No frequent contact (ref.)	1.00	-
Frequent contact	0.45 (0.23 – 0.90)	0.024
No extra-household relatives	0.19 (0.03 – 1.34)	0.096
Contact with friends		
No frequent contact (ref.)	1.00	-
Frequent contact	0.86 (0.41 – 1.80)	0.682
No friends	0.27 (0.03 – 2.08)	0.207
Network Content		
Spouse and relative (ref.)	1.00	-
Spouse & Friend	0.43 (0.14 – 1.31)	0.139
Friend & Relative	0.78 (0.18 – 3.35)	0.738
Relatives	1.63 (0.39 – 6.80)	0.500
Friends	1.45 (0.13 – 16.2)	0.765
0 or 1 close person	0.69 (0.15 – 3.19)	0.632
Network Size		
0 to 2 (ref.)	1.00	-
3 to 7	1.82 (0.60 – 5.54)	0.293
8 or more	0.83 (0.23 – 3.04)	0.782

[a]Reference category

Chapter 6 Appendices

Appendix 6.1: Perceived Social Support Items in Health Surveys for England 1998 and 1999 (originally used in The Health and Lifestyle Survey (Cox et al., 1987)), collected via self-completion questionnaire.

We would now like you to think about your family and friends. By family we mean those who live with you as well as those elsewhere.
Here are some comments people have made about their family and friends. We would like you to say how far each statement is true for you.
Please answer ALL the questions, ticking the box which you think most applies to you.

Item	**Answer Categories**
There are people I know – amongst my family and friends – who do things to make me happy.	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who make me feel loved.	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who can be relied upon no matter what happens.	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who would see that I am taken care of if I needed to be.	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who accept me just as I am	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who make me feel an important part of their lives.	Not true Partly true Certainly true
There are people I know – amongst my family and friends – who give me support and encouragement.	Not true Partly true Certainly true

Appendix 6.2: Polychoric correlation matrix for Close Person Questionnaire items (n=2237)

	1. Give you info…?	2. Rely on this person?	3. Make you feel good…?	4. Share interests, hobbies...?	5. Give you worries…?	6. Confide in this person?	7. Trust this person with most personal..?	8. Liked to have confided more…?	9. Talking make things worse?	10. Practical help major things?	11. Liked more practical help…?	12. Practical help small things?
1. Give you information, suggestions & guidance?	1.000											
2. Rely on this person?	0.554	1.000										
3. Make you feel good about yourself?	0.543	0.520	1.000									
4. Share interests, hobbies with person?	0.404	0.350	0.470	1.000								
5. Give you worries, problems and stress?	-0.067	0.018	-0.095	0.006	1.000							
6. Confide in this person?	0.525	0.414	0.429	0.354	0.032	1.000						
7. Trust this person with most personal worries?	0.464	0.449	0.386	0.323	0.010	0.602	1.000					
8. Liked to have confided more in this person?	-0.137	-0.182	-0.195	-0.133	0.299	-0.171	-0.223	1.000				
9. Talking to this person make things worse?	-0.090	-0.108	-0.133	-0.002	0.510	-0.086	-0.130	0.477	1.000			
10. Practical help with major things?	0.266	0.230	0.195	0.274	-0.013	0.365	0.284	-0.057	-0.068	1.000		
11. Liked more practical help with major things from person?	-0.077	-0.165	-0.196	-0.133	0.291	-0.087	-0.140	0.452	0.448	0.030	1.000	
12. Practical help with small things?	0.219	0.247	0.230	0.371	-0.009	0.199	0.216	-0.132	-0.056	0.486	-0.024	1.000

Appendix 6.3: Factor loadings from Confirmatory Factor Analysis of Close Persons Questionnaire from mediation model (n=2,237)
N.B. Standard errors were not provided for standardised estimates in Mplus for the mediation model, and hence are not reported here.

Factor	Item	Factor loading (standardised)
Positive Support	Give information, suggestions and guidance	0.703
	Rely on this person	0.657
	Person made you feel good	0.683
	Share interests, hobbies and fun	0.562
	Confide in this person	0.703
	Trust this person with problems	0.666
	Give practical help with major things	0.416
	Give you practical help with small things	0.413
	Liked to have confided more in this person	-0.176
Inadequate Support	Give you worries, problems and stress	0.520
	Liked to have confided more in this person	0.618
	Talking to this person made things worse	0.784
	Liked more practical help from this person	0.630

Appendix 6.4: Factor loadings from Confirmatory Factor Analysis of Close Persons Questionnaire from moderated mediation model (n=2,237)

Factor	Item	Factor loading (unstandardised)[a]	Standard errors
Positive Support	Give information, suggestions and guidance	1.000[b]	<0.01
	Rely on this person	0.858	0.13
	Person made you feel good	0.832	0.11
	Share interests, hobbies and fun	0.630	0.10
	Confide in this person	0.894	0.14
	Trust this person with problems	0.843	0.14
	Give practical help with major things	0.449	0.10
	Give you practical help with small things	0.397	0.09
	Liked to have confided more in this person	-0.175	0.07
Inadequate Support	Give you worries, problems and stress	1.000	<0.01
	Liked to have confided more in this person	0.555	0.11
	Talking to this person made things worse	0.618	0.18
	Liked more practical help from this person	0.575	0.16

[a] Standardised loadings unavailable in Mplus for this model
[b] To estimate the model the first factor loading is set to one.