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"I'LL LOOK AFTER THE KIDS WHILE YOU GO AND HAVE A SHOWER": AN EVALUATION OF A SERVICE TO ADDRESS MILD TO MODERATE MATERNAL PERINATAL MENTAL HEALTH PROBLEMS.

Abstract

Background

Perinatal mental health (PMH) problems are a major public health concern because they may impair parenting ability which potentially has an immediate and long-term impact on the physical, cognitive and emotional health of the child.

Aims

We evaluated a Perinatal Support Service (PSS) which supports positive attachment between mothers with PMH problems and the child, to evidence its impact on maternal mental health and maternal-infant interaction.

Method

Using a mixed-methods approach, anonymised pre and post service outcomes data from 123 clients, fourteen interviews and a focus group discussion were analysed.

Results

We found significant improvement in self-reported anxiety on the HAD Scale (t (55) = 6.96, $p<.01$, 95% CI [3.15, 5.70]), depression (t (55) = 6.58, $p <.01$, 95% CI [3.03, 5.68]) and on the GAD -7 (t (12) = 4.541, $p = .001$, 95% CI [3.48,9.90]) post receiving the service. Anxiety post service (M=9.08, SD = 4.96) was lower than baseline anxiety (M=15.77, SD = 4.68). Receiving emotional and practical support contributed to improvements in mental health and mother-child interaction.

Conclusion

Given the paucity of PMH services in the UK, it is imperative that services such as the PSS continue to receive funding to address unmet PMH service needs.

Key words

Perinatal mental health, evaluation, anxiety, depression, voluntary sector

Introduction

PMH problems are a significant public health concern affecting between 10-20% of women in the UK (RCGP, 2018). They represent various psychiatric disorders which begin or persist during the perinatal period, with depression and anxiety being the most common disorders (O'Hara and Wisner, 2014). These often comorbid with each other or with other severe disorders (Wisner et al., 2013).

The potential adverse consequences of PMH problems on the mother, her partner and her baby are well documented (Pilkington, Milne, Cairns, Lewis, & Whelan, 2015; Stein et al., 2014; Vliegen, Casalin, & Luyten, 2014). These may include an impaired parenting ability due to disengagement with the infant; poor responsiveness to their attachment cues; inability to support them when they are distressed, or inability to provide them with emotional warmth (Stein, et al., 2014). These are important aspects of parenting which can potentially have a direct immediate, as well as long-term, impact on the infant's physical, cognitive, emotional and social development (Bauer A, Knapp M, & B, 2016; Drury, Scaramella, & Zeanah, 2016).

The costs of PMH problems are estimated at £8.1 billion for each birth cohort, with 71% of these costs being associated with adverse impact on the child rather than the mother (Bauer A, et al., 2016). These costs do not account for instances where no action is taken to address maternal PMH problems, which is a significant concern given that there is evidence to suggest that up to 50% of women experiencing PMH are unable to access adequate support to facilitate recovery (Hewitt et al., 2009; Prady et al., 2016). Early provision of PMH services may improve immediate and later outcomes for children (Durkan, 2016).

To this end, investment in PMH services was identified as a priority area in the 2016 NHS Five Year Forward View (Mental Health Task Force, 2016). However, there remains an unmet need for those with mild to moderate PMH problems which also has an adverse impact on the first 1001 critical days of a child. Provision of PMH services requires a multiagency approach and the Five Year Forward View fully recognises the role played by the voluntary sector in supporting women with mild to moderate PMH problems (Mental Health Task Force, 2016). This role is well documented in literature (Barlow and Coe, 2012;

Coe and Barlow 2013). The 1001 critical days manifesto also envisages that voluntary organisations can provide appropriate support to families at risk of PMH problems (Durkan, 2016). Against this backdrop, Family Action, a voluntary organisation was funded by the Big Lottery to set up a Perinatal Support Service (PSS) in Medway in October 2014. They also funded an independent evaluation of the service which aimed to evidence the PSS' impact on maternal mental health and mother-infant interaction.

Methods

This was a mixed methods evaluation guided by a service defined Theory of Change (ToC). This was developed in collaboration with various stakeholders including parents. The ToC specified the service components, the long-term goal, short term and midterm outcomes, the possible mechanisms of causes and effects as well as suitable qualitative and quantitative indicators for the evaluation (Breuer, Lee, De Silva, & Lund, 2016). This process also guided the development of the interview and focus group guides.

The Intervention

The PSS is delivered from the 16th week of pregnancy to the child's first birthday. Women at risk of or with minor symptoms of PMH problems are referred to the service by various healthcare professionals such as health visitors; midwives or GPs. The key aspects of the service are:

- Initial assessment of client's needs by a service coordinator with a health and social care background.
- Training and supervision of support workers and volunteer befrienders (volunteers trained to provide emotional and practical support to clients).
- Client home visits by volunteer befrienders or support workers for a minimum of two and a half hours per week to provide emotional and practical support with day to day activities.
- Use of validated outcome measures to measure clients progress pre and post accessing the service.

- Establishment of small peer support groups for clients to enable development of social networks; foster knowledge and understanding of the baby's needs and support the emotional wellbeing of clients.
- Collaborating with various stakeholders who refer clients into the service or receive as clients referred from the service.
- Referral to receive eight therapeutic one to one sessions delivered by trained volunteer counsellors, psychology graduates or students on placement with the voluntary organisation Parent Infant Partnership (PIP) UK.

Quantitative data

All service users gave consent for the use of anonymised pre and post service data on their mental health and mother-child interaction for the evaluation of service. These data were provided to the research team and analysed using SPSS v24.

From January 2015 to December 2015, there were 69 closed cases. Outcome measures collected for these cases were : Mothers' Objects Relation Scale (MORS) (Oates and Gervai, 2003), Hospital Anxiety and Depression scale (HADS) (Zigmond and Snaith, 1983) and Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Tennant et al., 2007). After initial pilot of these outcome measures, different outcome measures were introduced in January 2016 by the PSS as part of largescale organisational changes.

Data were split into two sets to account for these changes. There were 59 closed cases between January 2016 and October 2017. Outcome measures for data set were : Maternal Postnatal Attachment Scale (MPAS) (Condon and Corkindale, 1998), Generalised Anxiety Disorder Assessment -7 (GAD-7) (Spitzer, Kroenke, Williams, & Lowe, 2006), Patient Health Questionnaire (PHQ-9)(Spitzer, Kroenke, Williams, & Patient Hlth Questionnaire, 1999).

We did not have a formal sample size calculation for the quantitative outcomes because there was no hypothesis being tested. There were 123 closed cases at the time of the evaluation, we included all the cases so that we could assess with reasonable precision (based on 95% confidence limits) whether or not there were changes in the outcome measures pre and post accessing the service. We also reviewed previous PMH service

evaluations and similarly included all cases available at the time of the evaluation in the final analysis (Barlow and Coe, 2012; Calveley, Cheyne, Brigid, & Maxwell, 2016). None of the previous evaluations investigated the effect size of the PSS and on maternal mental health hence there were no prior studies available on which to base a formal sample size calculation.

Although we included all cases, some outcome data were missing as is common in health research (Schlomer, Bauman, & Card, 2010) as detailed in table 1 :

Table 1 Percentage of missing outcome measures:

Qualitative data

Participants were recruited into interviews via an advert sent to previous service users, partner organisations and volunteer befrienders by the PSS. Interested participants contacted the research team. interviews were conducted using an interview guide with nine purposively selected clients, two partner organisations and three volunteer befrienders. Data collection was stopped after reaching data saturation. We conducted a focus group discussion (FGD) with four staff members using a FGD guide. The FGD was initially moderated by EM while SG took notes and then these roles were swapped for the last section of the discussion. Probes were used to enable participants to elaborate on any initial responses in the interviews and the FGD.

Data analysis

Frequency analysis was performed on all quantitative data for demographics relating to referral reasons and sources. Missing value analysis was performed on both data sets with Little's MCAR test ($p > .05$) supporting data being missing completely at random (MCAR) (Rubin, 1976). More than 5% of data was MCAR hence multiple imputation was conducted in SPSS using the automatic imputation method using a linear regression model for scale variables. Paired t-tests were then conducted. Due to high levels of missing data measures

for data set two, measures were analysed individually. Paired sample t-tests were conducted on all data set two measures to compare means using both list-wise (complete cases) and analysis-by-analysis (cases with valid data). The strength of the relationship between changes in outcome measures and other variables were measured using Kendall's Tau correlation. Multiple regressions analysis was not performed on the data due to the high level of missing data and data distribution. A sensitivity analysis was conducted comparing per protocol and multiple imputation with the intention to treat (ITT) analysis to test the validity of findings (Unnebrink and Windeler, 2001).

Qualitative data were analysed using Framework Analysis (Ritchie and Spencer, 1994) with NVivo v11.4 used for data management. We familiarised with the data then developed a thematic framework for indexing data (Ritchie and Spencer, 1994). This was followed by charting, mapping and interpretation which allowed development of descriptive and explanatory findings illustrated using anonymised quotations (Ritchie and Spencer, 1994).

Ethical approval to conduct the evaluation was obtained from the University of Kent Research Ethics Committee reference SRCEA id 182. Participants provided written informed consent to participate in the evaluation.

Results

Description of the PSS Service clients

Quantitative data were analysed for 123 cases closed between January 2015 and October 2017. The number of family members per case ranged from one to nine (*M*=3.8 members, *SD* = 1.4). Mothers ages ranged from 17 to 42 years (*M*=29.8 years). Nine clients participated in the interviews, their socio-demographic characteristics are summarised in table 2:

Table 2: Socio-demographic characteristics of client interviewees

There were very small numbers of staff members (n=4), volunteer befrienders (n=3) and partner agencies (n=2) who participated in the evaluation. Their full range of demographics details are not presented to protect their anonymity.

Process of referral to the PSS

Clients were referred to the PSS by various professionals as shown in figure 1:

Health Visitors accounted for 53.7% of all referrals. The qualitative data indicated that PSS staff had variable success in coordinating the service across various other services and specialties.

Range of support provided by PSS

The range of support provided to clients is summarised in figure 2. Service duration ranged from less than one week to sixty-six weeks (M = 21.5 weeks, SD = 14.1 weeks) as the service was tailored to meet individual needs.

The qualitative data showed that the PSS primarily addressed PMH problems through the befriending service. Our working definition of befriending is, the process by which support workers or volunteer befrienders, met with clients on a regular basis to provide emotional and or practical support (Calveley, et al., 2016). Befriending took various forms, including individual one-to-one sessions delivered during home visits, or in other mutually agreed locations. The number of home visits per family ranged from 0 to 45 (M = 8.85 visits, SD = 8.96) as the service was tailored to meet individual needs.

Befriending involved regularly checking how clients were coping emotionally and practically. It provided clients with a "safe place" to discuss their challenges with someone empathetic and non-judgemental. Mothers reported that this provided them with different perspectives on the challenges and boosted parenting self-efficacy:

> I think because the ladies are so…lovely and it feels, it doesn't feel like they're being paid to help you out, it feels like they're actually kind of a genuine extra friend….but at the same time you are, you're aware that they're not a friend. **Client 109**

You think that you've got to make everything run smoothly and then feel really guilty when you don't …..Just sometimes having someone to say…, "Do you know what? It's fine, don't worry about it, washing up can wait." **Volunteer befriender 11**

Mothers reported receiving practical support, such as help with daily tasks which helped to reduce feeling overwhelmed. Befriending reduced social isolation through the regular home visits, supporting mothers to attend significant meetings outside the home or supporting mothers to attend the PSS group sessions to obtain peer support and make new friends:

They're [group meetings] invaluable really.....especially to like first time parents or like parents who experience, going through other troubles as well, because you, you meet all, like all sorts at the group. ……a lot of them have all had, got their own troubles and stuff, so just knowing you're not the only one in the boat sort of thing. **Participant 105**

In addition to the befriending service, some mothers reported receiving counselling from volunteer trainee counsellors to address PMH problems or inability to emotionally connect with a child. Referrals to access specialist services were also made for PMH needs which exceeded the scope of the service.

Supporting parent-infant interaction

Support to enhance parent-infant interaction was provided universally during home visits or group meetings as PSS staff often modelled interacting with children during home visits:

P1: …encouraging what you see as like positive behaviour, so you're seeing them with their baby for example, they might just think that they're just doing something like really bog standard, like sitting their baby and like talking to them and gargling and doing all of that, really bog standard, …….if you address that and go "oh that's really nice" and "baby can see this now" and kind of like look at like child development and things like that, they go "oh like I didn't almost realise that"…pointing that out encourages them to do it more, which I think quite often they don't realise the effect of those little things…….
P4: Yes. **Staff FGD**

> …and she brings me out activities to do each week….she……brought me out a booklet this morning, um, for like songs to sit and sing with him and just like building that interaction……and building that bond **Client 103**

Parents were encouraged to make parent-infant interaction a natural part of their normal activities. Where additional input to support bonding was required, staff suggested specific activities such as games, songs or provided referrals to other services to enhance bonding for example baby massage classes.

The impact of the PSS on maternal mental health

The analysis indicated improvement in maternal mental health following the PSS. For data set one, results indicated significant improvement in levels of self-reported anxiety on the HAD (t (55) = 6.96, $p<.01$, 95% CI [3.15, 5.70]) and depression (t (55) = 6.58, $p <.01$, 95% CI [3.03, 5.68]) following the PSS. Changes in mental health were reflected in the statistically significant increase in mental wellbeing assessed through the WEMWBS (t (29) = -6.05, $p<.01$, 95% CI [-17.57, -8.69]) as detailed in table 3. A Kendall's tau-b correlation found a statistically significant positive correlation between the difference in anxiety and difference in depression (τ_b =.484, $p <.01$) suggesting that for clients who had both anxiety and depression, a reduction in anxiety was associated with a reduction in depression.

Table 3: Mean clients scores (and standard deviations) of MORS, HADS and WEMBS

The improvement in overall mental health was also replicated in data set 2. A paired-samples t-test (analysis-by-analysis) found a significant mean difference (t (12)= 4.541, $p = .001$, 95% CI [3.48,9.90]) with anxiety post the PSS (M=9.08, SD = 4.96) lower than anxiety pre PSS (M=15.77, SD = 4.68). Caution is required in interpreting these findings as with a sample size of 13 the probability of an alpha error (type 1) is 0.75, critical t 0.312. A paired-samples t-test found a significant mean difference (t (12)= 5.015, $p <.01$, 95% CI[5.35,13.57] with post PSS depression (M=6.92, SD = 3.0) lower than pre PSS depression (M=16.38, SD = 7.37). These changes are detailed in table 4:

Table 4: Mean client scores (and standard deviation) of GAD-7, PHQ-9 and MPAS

The qualitative data supported the quantitative findings. Several mothers felt that their mental health had improved after accessing the PSS:

> I went back to work straightaway so I suppose I kind of felt like I'd dealt with feeling unwell before going back to work... **Client 116**

> It's a million times better than it was this time……last year because I'm actually able to function in society again……rather than just being this recluse that every time, dreads…that the shopping is needed because she doesn't want her husband to leave her in case she keels over or particularly keels over while holding the baby and…what can I say?….**Client 109**

The above discourses suggest that mothers felt that the PSS was a major contributing factor to their recovery from PMH problems. It is important to note that mothers described variable changes in mental health on a continuum, from being fully recovered to noting a level of change but still requiring specialist input. Clients suggested that several factors in addition to the support from the PSS contributed to their improvement in mental health. This included the specialist mental health services or their GP who prescribed antidepressant and or anxiety drugs as necessary:

> By the time that Family Action got involved over Christmas the medication kind of kicked in, so I'd managed to kind of push myself a little bit anyway. …But it was really, really, I don't think I'd have recovered anywhere near as quickly as I did or maybe even not as much as I did with, without her [support worker] support… **Client 109**

Overall, there were very positive reviews about the service. Several clients felt that the service needed to continue to receive funding in order to support more families based on the changes they could see in themselves or other clients. To this end, there was a consensus among clients that the service addressed an unmet need for PMH services in Medway. Furthermore, mothers felt that the level of support that the PSS provided complemented other services such as the GP, midwives or health visitors, who did not have the capacity to provide the same frequency and intensity of the one-to-one support and home visits to families as the support workers or volunteer befrienders. A Kendall's tau-b correlation found a statistically significant positive correlation between the number of visits

and difference in reported anxiety (τ_b=.19, *df* = 56, *p* = .038). However, for data set two, the relationship between the number of home visits and changes in all outcome measures was non-significant which may be because of the smaller sample for data set two. These findings suggest that the home visits were critical for improvement in maternal mental health and potentially valuable for improving the maternal-infant relationship.

The impact of PSS on mother-infant interaction

This evaluation sought to understand the impact of the service on mother-infant interaction. For data set one, an exact Wilcoxon signed rank test showed there was a statically significant difference in clients perceived warmth of infant (*N*=51, *z* = -4.57, *p* <.01) and invasiveness (*N*=51, *z* = -2.29, *p* =.021). A Kendall's tau-b correlation found a statistically significant negative correlation between the difference in anxiety and perceived warmth towards infant (τ_b = -.254, *p* <.14) and a statistically significant negative correlation between the difference in depression and perceived warmth towards infant (τ_b= -.328 , *p* <.01).

Although a much smaller sample size was used for data set two, the results were also indicative of an improvement in the mother-infant relationship. A statistically significant MPAS total mean difference was reported in a paired-samples t-test (*t* (7) = - 3.81, *p* = .07, 95% CI [-13.23, -3.09]) with a mean increase of 8 points. The attachment subscale reported a statistically significant mean difference (*t* (7) = -3.34, *p* = 0.12, 95% CI [-1.14, -3.34]) with scores increasing from pre PSS (*M*=36.2, *SD* =4.99) to post PSS (*M*= 40.1, *SD* = 3.85) indicating improved self-reported attachment between mother and infant. The hostility and interaction MPAS sub scales were non-significant. The number of cases who completed this measure pre PSS is low (*n*=10) and post (*n*=8).

The qualitative data confirmed the quantitative findings with several reports of improvements in mental health and bonding with the child:

> I'm feeling better in myself. …. I'm on 100mgs of Sertraline, but I feel a lot more relaxed than I did……beforehand. I don't feel under as much pressure and I feel like my bond with both of …the kids is improved. **Client 103**

For mothers who had been specifically referred to the service to get support to bond with their child, there was a general consensus that the PSS had supported them to achieve this. This was on a continuum ranging from those who felt that they had recovered from PMH problems and were better placed to bond with their child, to mothers who felt that this aspect of their parenting was still a work in progress.

Discussion

The design of the evaluation had several strengths which allowed the team to meet the evaluation objectives. However, there were some limitations in the design. Firstly, there was a significant amount of missing quantitative data which impacted on the quality of analysis which could be performed. This limits the future generalisability of findings. The evaluation was not designed to measure the effect size of the service, we recommend a randomised control trial or a quasi-experimental design to be able to determine the specific effect of the service on PMH.

The results of this evaluation match other previous evaluations of the Perinatal Support Service delivered in other areas (Barlow and Coe, 2012; Calveley, et al., 2016; Lederer, 2009). We significant improvements in self report symptoms anxiety and depression, as well as the mother-infant relationship. These are important findings as they suggest that the PSS improved outcomes for mothers and infants and may be able to reduce some of the costs related with the impact of untreated PMH problems on the mother, infant and or her partner by providing an early intervention for PMH problems (Bauer A, et al., 2016). These positive results also suggest that the PSS can be classed as an important Tier 2 intervention for the 1001 critical days (Durkan, 2016).

Several clients reported that the PSS was a major contributing factor to the changes in their mood and anxiety levels. A key underlying component is the emotional, practical and social support clients received from the PSS staff. This has been reported previously as enabling recovering from perinatal mental health problems (Coe and Barlow 2013).

With improvement in mental health, clients also reported an improvement in their ability to bond with their baby, and in some instances improvement in their relationships with their other children, as well as their spouse or partner. The improvements in mental health and maternal-infant relationship suggest that the PSS was successfully meeting its aims and objectives. Caution is required when interpreting the effect of the intervention on mental health as the improvement could have been due to an interaction of prescribed medication and the PSS. This suggests that there is a specific role which is played by the PSS in helping clients recover that is not available through medication alone. This is in line with the NHS Five Year Forward View which also suggests that voluntary organisations such as the Family Action have a role to play in addressing mild to moderate PMH problems and increasing access to much needed services for PMH problems (Force, 2016).

Given the paucity of services for those experiencing mild to moderate PMH problems, the Medway Perinatal Support Service is filling a significant gap in services and providing support to those who would otherwise not receive any services. It is imperative that voluntary organisations continue to receive funding to deliver similar services to fathers and other carers to address gaps in the UK PMH services.

Declaration of Interest

The authors have no conflict of interest to declare.

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Tables

Table 1 Percentage of missing outcome measures:

Measure	Pre (%)	Post (%)
HADS	4	19
WEMWBS	37	56
MORS	23	26
GAD-7	70	71
PHQ-9	70	76
MPAS – *total score*	82	85
MPAS – *attachment*	82	85
MPAS – *hostility*	82	85
MPAS – *interaction*	87	87

Table 2: Socio-demographic characteristics of client interviewees

Characteristic	Distribution (% n=9)
Sex	
Male	11.1
Female	88.9
Age Group	
25-30 years	33.3
31-40 years	44.4
Age not disclosed	22.2
Marital Status	
Married or Living Together	66.7
Single	22.2
Divorced	11.1
Number of Children	
1	44.4
2	22.2
≥ 3	33.3

Table 3: Mean clients scores (and standard deviations) of MORS, HADS and WEMBS

Measure	Pre PSS	Post PSS	Difference
MORS -*warmth* (n=52)	28.89 (5.50)	31.60 (6.11)	2.71 (7.34) *
MORS – *invasion* (n=52)	10.56 (6.78)	9.69 (7.19)	0.87 (7.98) *
HADS – *anxiety* (n=56)	13.11 (4.04)	8.68 (4.55)	4.43 (4.76) *
HADS – *depression* (n=56)	10.16 (3.99)	5.80 (4.46)	4.36 (4.95) *
WEMWBS (n=30)	35.40 (8.91)	48.53 (9.35)	13.13 (11.89) *

* Statistically significant at p < .05

Measure	Pre PSS	Post PSS	Difference
MORS -*warmth* (n=52)	28.89 (5.50)	31.60 (6.11)	2.71 (7.34) *
MORS – *invasion* (n=52)	10.56 (6.78)	9.69 (7.19)	0.87 (7.98) *

Table 4: Mean client scores (and standard deviation) of GAD-7, PHQ-9 and MPAS

Measure	Pre PSS	Post PSS	Difference
GAD (n=13)	15.77 (4.68)	9.08 (4.96)	6.69 (5.31) *
PHQ-9 (n=13)	16.38 (7.37)	6.92 (3.01)	9.46 (6.80) *
MPAS – *attachment* (n=8)	36.23 (4.99)	40.13 (3.85)	3.90 (3.29) *
MPAS – *hostility* (n=8)	19.51 (2.96)	21.51 (3.13)	2.00 (3.03)
MPAS – interaction (n=6)	19.50 (7.00)	19.50 (5.28)	0.00 (2.36)
MPAS – *total* (n=8)	70.35 (12.97)	78.51 (11.22)	8.16 (6.06) *

* Statistically significant at p < .05 Please note the small sample sizes
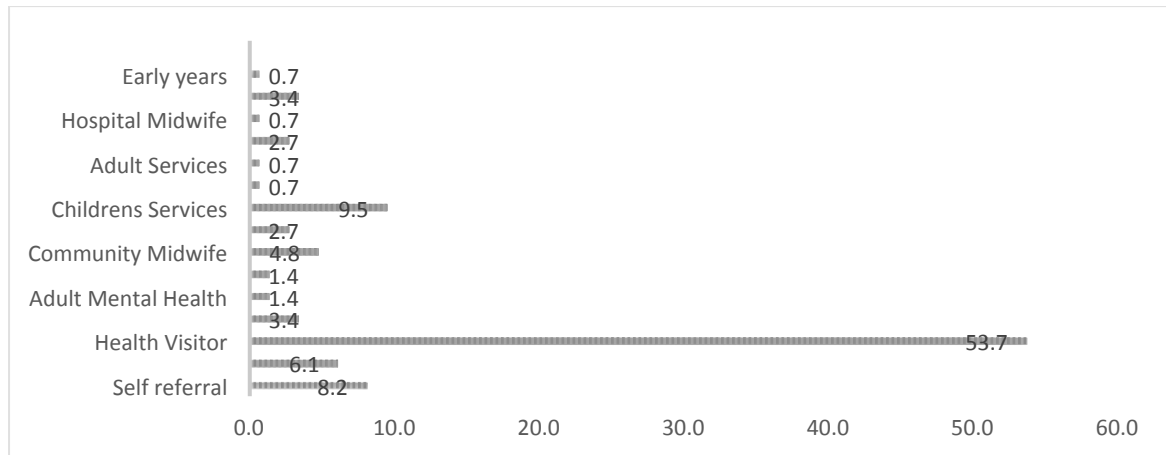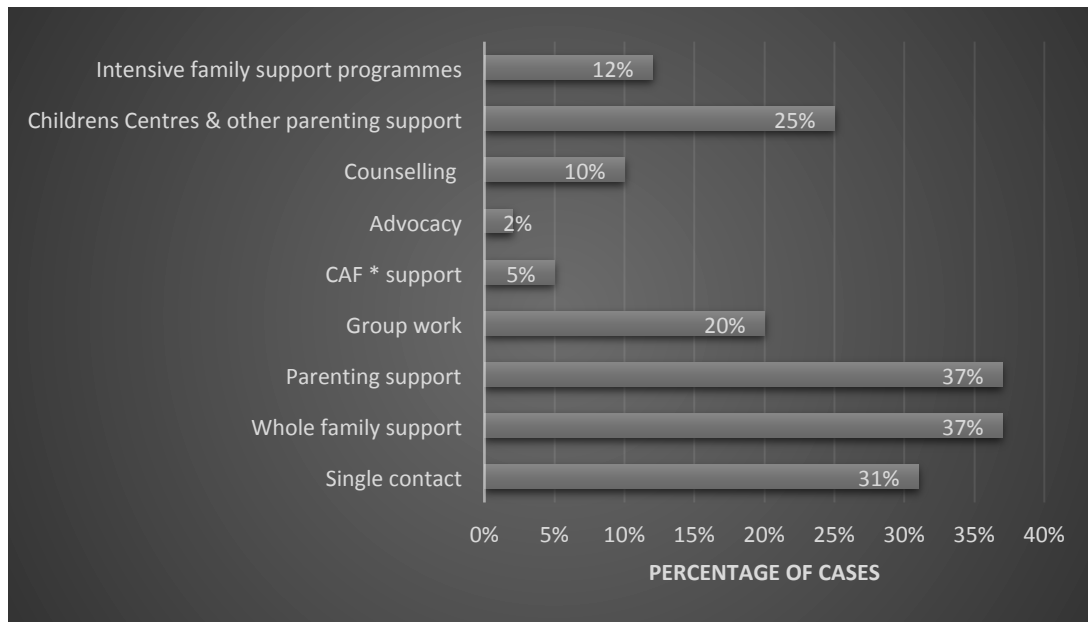
Figures

Figure 1: PSS referral sources

A horizontal bar chart showing PSS referral sources with the following values:

Referral source	Value
Early years	0.7
	3.4
Hospital Midwife	0.7
	2.7
Adult Services	0.7
	0.7
Childrens Services	9.5
	2.7
Community Midwife	4.8
	1.4
Adult Mental Health	1.4
	3.4
Health Visitor	53.7
	6.1
Self referral	8.2

Figure 2: Range of support provided to Clients

* Common Assessment Framework

List of figures