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Yoga4Health on social prescription: a mixed methods evaluation

Dr Tina Cartwright (Reader in Psychology)
Dr Rebecca Richards (Research Associate)
Amy Edwards (Research Associate)
Dr Anna Cheshire (Research Fellow)
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For further information:

Tina Cartwright
Psychology, School of Social Sciences,
University of Westminster
115 New Cavendish St
London W1W 6UW
E: T.Cartwright@westminster.ac.uk

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Executive Summary

Background

Social prescribing is a means of enabling GPs and other primary healthcare professionals to refer patients to a range of non-clinical community services, in order to support people in a holistic way, recognising that health is influenced by a range of social, economic and environmental factors. Yoga is often provided in local communities and has become increasingly popular as a holistic approach to health and wellbeing, as well as a therapeutic intervention to improve management of health conditions. West London Clinical Commissioning Group commissioned a pilot yoga programme called 'Yoga4Health', for social prescription in their area, which is the first of its kind in the country.

The Yoga4Health programme is a multicomponent, group intervention which includes yoga postures, breathing practices, relaxation, psychoeducation, and group discussion. Regular home practice is encouraged as part of the overall intervention. The programme comprises 2-hour, weekly sessions, over 10 weeks.

Patient group: To address the needs of West London CCG primary care services, Yoga4Health was designed and offered to those with risk factors for cardiovascular disease, pre-diabetes, anxiety, depression and social isolation. Patients either self-referred to the programme or were referred by their general practitioner. Of the 365 service users booked onto the Yoga4Health programme, 279 attended at least one of the ten sessions which were run over a total of 22 courses, between February 2018 and May 2019.

Aims of the evaluation

The primary aim was to assess the acceptability, feasibility and outcomes of the pilot Yoga4Health programme. Specifically, the evaluation investigated: 1) patient-reported outcomes from the service, 2) patient and stakeholder experiences of - and attitudes to - the service, 3) use and acceptability of the service, 4) cost implications for the service, and 5) ways to improve the service.

Methods

A before and after, mixed-methods feasibility study was used to evaluate the Yoga4Health programme. A return on investment analysis was also conducted. Ethical approval for all parts of the evaluation was obtained from the University of Westminster Psychology Research Ethics Committee.

Quantitative data: Questionnaires were collected at baseline, immediately post-intervention and three months follow-up. Outcome measures include participants' perceived stress and health status, patient activation, anxiety and depression, perceived social isolation, wellbeing, and waist circumference.

Qualitative data: Semi-structured interviews and focus groups were conducted with both service users (N=22) and stakeholders (N=8) after the intervention to explore their

experiences of the programme. In addition, free-response questions were included on all questionnaires. Thematic analysis was used to analyse qualitative data.

Key Findings

- Of the 279 participants attending at least one yoga4health session, 240 (86%) completed a baseline questionnaire and 187 went on to complete the post-intervention and/or 3 month follow-up questionnaire.
- **Participants** were predominately female (83%), 44% were educated to degree level, 40% identified as BAME, and 48% rated their health as poor or fair at baseline.
- **Primary motivations for attending Yoga4Health programme included to:** 1) improve psychological health; 2) improve their physicality, such as flexibility, balance or fitness; 3) improve or maintain physical health and well-being.
- **Patient reported outcome data demonstrated significant improvements from baseline to post-intervention on all outcome measures, which were sustained 3 months after the yoga4health programme.** Service users showed statistically significant and clinically meaningful decreases in perceived stress, anxiety, and depression suggesting the mental health benefits of the course. Significant improvements were also found for patient activation (confidence in managing one's health), wellbeing and social connectedness, highlighting the programme's positive psychological and social benefits.
- **Physical health also showed meaningful improvements:** 45% of service users reported improvements in their health and waist circumference showed significant decreases (an average of 14cm).
- **Service users cited a wide range of benefits of the Yoga4Health course** in the qualitative evaluation. This included valued benefits for their psychological health, physical health, social interactions, self-care and patient activation or confidence. In particular, breathing and relaxation exercises learnt during the programme were applied in daily life to support psychological health, giving service users a tool kit to use in everyday stressful situations. Many reported a shift towards healthier behaviours, such as improved diet and increases in physical activity.
- **Group classes provided informational, emotional, and social support to service users**, which was highly valued and facilitated a sense of social connection and motivation to practice yoga.
- **The Yoga4Health programme was perceived as acceptable** and appropriate for a wide range of physical abilities by both service users and stakeholders. Having local, free classes specifically for those with health problems, which were affiliated with the NHS were important facilitating factors.
- **Service users reported high enjoyment of the course** and enjoyment supported engagement; the inclusiveness of the yoga teachers and the supportive group dynamic were highly valued. Barriers to enjoyment related to venue issues, such as lack of heating or limited equipment.
- **Three months after completing the Yoga4Health programme, service users practiced yoga on an average of 2 days per week;** 44% had begun attending a local yoga class and half used the Yoga4Health resources to continue their home practice. Barriers to continued yoga practice included time pressures, lack of access to a suitable class, and the cost of community classes.

- **Stakeholders discussed a range of practical challenges within the delivery of the Yoga4Health programme**, including accessing vulnerable or marginalised groups; delivery of a manualised approach to service users with a range of needs and abilities, and managing attendance attrition.
- **Cost data showed that for every £1 spent on Yoga4Health there was a return on investment of £2.19**, mostly accruing due to a reduction in health service usage. This figure is similar to those reported by other social prescribing schemes, it represents a return on investment for only a 1-year period and not lifetime savings.
- **The Yoga4Health project unit costs were £307.76 per patient**. This unit cost is slightly higher than those associated with other social prescribing schemes, likely to reflect the smaller scale of the current programme.

Conclusions

The evaluation found that it is possible to effectively develop a yoga intervention for a diverse group of NHS patients that can be delivered within an NHS social prescribing pathway. This kind of intervention appears to be acceptable to at-risk patient groups, as well as GPs and community groups who are willing to support referral and delivery. Yoga programmes for specific patient groups can provide physical activity and well-being support for those who may be lacking confidence to attend other more generalised exercise and well-being programmes, and is likely to offer a range of physical and mental health benefits.

The Yoga4Health programme is starting to be delivered in other areas of the country. In further developing the programme, this evaluation confirms the importance of having experienced and supported yoga teachers and a provider with local knowledge to access diverse patient groups, it also provides recommendations for future delivery. The evaluation provides the basis for further study of the Yoga4Health programme: evaluation outcome measures were sensitive to changes within this population and their use is recommended for future evaluation, in order to build a body of evidence regarding the programme. Future research should also investigate comparisons between the Yoga4Health programme and usual care, incorporate objective outcome measures, and examine cost effectiveness in more detail.

“It was a very special course and I am very lucky to have been part of it. It was life changing.” [Questionnaire response]

“I wholeheartedly think it should be introduced within the NHS. I think it’s about time.” [Focus group 2]

“I would love for this to be very accessible to everyone, because I really do believe in the course content. I’m not just saying that. I think it’s just, we all felt that when we were learning the course as well, we were just like, “Who wouldn’t benefit from this?” [S4, yoga teacher]

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- The yoga teachers who delivered Yoga4Health and collected some of the evaluation data.
- All patients/service users who participated in the Programme and completed the evaluation assessments and all stakeholders who took time to participate in evaluation interviews.

1. Introduction

1.1 Background

Social prescribing is a means of enabling general practitioners (GPs) and other primary healthcare professionals to formally refer patients to a range of non-clinical sources of support, namely community services, such as volunteering, arts activities, sports, cookery and singing. Often patients are initially referred to a link worker where they learn about what community services are available, and are able to co-produce their own 'social prescription' according to their individual needs. Social prescribing aims to support people in a holistic way, recognising that health is influenced by a range of social, economic and environmental factors¹. Following the 2006 recommendation for the introduction of social prescriptions for individuals with long-term conditions by the Department of Health, NHS England appointed a national clinical champion for social prescribing². Since then, the implementation of social prescribing in practice has been increasingly supported by policy. It is now a key component of 'Universal Personalised Care: Implementing the Comprehensive Model', the action plan for rolling out the commitments of the NHS Long Term Plan for personalised care across England by 2023/24^{3,4}. Many NHS localities are now offering or considering implementing their own social prescribing programmes in addition to those offered by the community. Yoga is one such activity that may be suitable for inclusion within this new pathway for community holistic health and wellbeing⁵.

West London Clinical Commissioning Group (CCG) commissioned the design and piloting of a yoga intervention as a social prescribing service for its patients - the first of its kind in the country. This introduction reflects West London CCGs drive to better meet the needs of its patients for whom there are limited referral options, including those with risk factors for cardiovascular disease, pre-diabetes, anxiety and depression and those who may feel socially isolated. Evidence suggests that yoga can help reduce the risk factors of lifestyle diseases and support the management of physical and mental health conditions. The CCG commissioned the Yoga in Healthcare Alliance (YIHA), a social enterprise, to design and implement a yoga programme that was suitable for these patient groups to be delivered in the community, the resulting programme was called Yoga4Health.

The aim of this report is to present the findings of an independent evaluation of the Yoga4Health service. The report firstly sets the findings in context by presenting background literature on yoga as a health intervention. It then outlines the aims and methods of the evaluation, before reporting findings relating to patient outcomes, service user and stakeholder experiences of the Yoga4Health programme, and cost implications.

1.2 Yoga as a health intervention

Yoga has its origins in Indian philosophy and has been practised historically throughout India and East Asia. However, yoga has become increasingly popular in the West as a holistic approach to health and wellbeing^{6,7} and more recently, as a therapeutic intervention to improve management of health conditions⁸. There are a variety of different schools and styles of yoga, however the main components include physical postures focusing on

isometric exercises and stretching (asana), breathing techniques (pranayama), and the practice of relaxation and meditation (dhyana). There is growing evidence that yoga is an effective multi-component health intervention to improve mental health (including reducing stress, anxiety and depression), and physical health (including heart disease, high blood pressure, diabetes, and aches and pains), alongside increasing levels physical activity^{8,9}. One advantage of yoga over other physical exercises is the relatively low physical impact. The NHS therefore promotes yoga as a safe and effective physical activity for people with a range of chronic conditions, including heart disease, high blood pressure, aches and pains, depression and stress¹⁰.

1.2.1 Impact of yoga on risk factors for cardiovascular disease and type 2 diabetes

Systematic reviews have reported the potential effects of yoga interventions, compared to usual care or other exercise, on cardiovascular risk factors in the general population and high risk groups (e.g. those with hypertension, metabolic syndrome, and type 2 diabetes)^{11,12}. Although varied in terms of duration, yoga style and components, interventions were typically around one hour for 12 weeks. Significant improvements were found on a range of physiological measures including diastolic blood pressure, HDL cholesterol, triglycerides¹², as well as heart rate, respiratory rate, waist circumference, HbA1c and insulin resistance¹¹. A more recent review of 12 studies provided further support for these findings, and also reported improvements in body mass index, quality of life, and pulmonary function for both general population and high risk groups¹³. Additionally, yoga has been shown to have ancillary benefits for populations at risk of cardiovascular disease, including improved reduced stress and anxiety, better sleep and improved diet¹⁴.

Similarly, a recent systematic review investigated the effects of yoga interventions compared to usual care or other exercise, for adults with type 2 diabetes¹⁵. The review reported similar intervention characteristics as those used for people at risk of cardiovascular disease^{11,12}. Compared to controls, yoga showed significant improvements in markers of glycemic control, with reductions in HbA1c, fasting blood glucose and post-prandial blood glucose. This review also supported previous findings, with significant improvements in other markers of diabetes management, including lipid profile, blood pressure and body composition, and cortisol levels, compared to controls^{16,17}. Furthermore, a recent study of a community-based, short-term ten-day yoga intervention reported a significant reduction in fasting blood glucose for adults with a diagnosis of pre-diabetes, which suggests yoga may prevent worsening glycaemic control for adults in the pre-diabetic range¹⁸.

1.2.2 Impact of yoga on mental health

Whilst yoga is commonly associated with increased wellbeing, a recent systematic review reported 'weak' evidence that yoga led to increases in positive mental wellbeing indicators (psychological well-being, life satisfaction, social relationships, and mindfulness) in non-clinical populations, when compared to active controls¹⁹. More specifically, yoga led to increases in psychological well-being when compared to no intervention, but not when compared to physical activity. Interestingly, yoga has been found to have more robust

effects on decreasing negative mental wellbeing – notably, by decreasing anxiety and depression, as well as physiological markers of stress, such as blood pressure, heart rate, and cortisol. For example, a meta-analysis of 12 randomised control trials of yoga interventions for patients with depressive disorders and elevated levels of depression found reductions in severity of depression compared to receiving standard care only²⁰. Yoga interventions have also been shown to reduce perceived levels of stress both in healthy adults and ageing populations^{21,22}.

There is increasing evidence that yoga directly impacts on the autonomic nervous system, by regulating the hypothalamic-pituitary-adrenal (HPA) axis, reducing sympathetic activation^{23,24} and increasing levels of gamma-aminobutyric acid (GABA)²⁵. These physiological mechanisms are associated with improved outcomes in mood disorders and decreases in depressive and anxious symptoms in non-clinical populations when compared to controls or comparison conditions²³. More specifically, a recent meta-analysis found yoga postures in particular were significantly associated with improved stress-related physiological measures, compared to active controls²⁴.

1.2.3 Yoga to reduce feelings of social isolation

As well as offering physical and mental health benefits, yoga has been associated with increased social connectedness and as such, has been advocated for populations at risk of social isolation, such as the elderly, bereaved or depressed^{26,27}. A small but growing number of studies have investigated the effects of yoga on social health, in both the general population and high risk groups. Findings suggest that yoga creates a sense of community for those who practice it, both practically and emotionally, as participants report meeting new friends and feeling like they belong^{26,27}. Additionally, yoga may improve existing interpersonal relationships by leading to changes in attitudes and perspective, including improving patience, kindness or self-awareness²⁶. A model of the potential pathway of how yoga might enhance relational outcomes hypothesises that yoga practice first leads to positive intrapersonal changes, which in turn, positively influence interpersonal relationships²⁸.

1.3 Patient experiences of yoga interventions

Yoga interventions, which typically include weekly, instructor led, group classes for three months, have been found to be acceptable for a range of populations, including those with depression, type 2 diabetes, and at risk of cardiovascular disease^{14,29–32}. Factors that have been associated with acceptability include having supportive, kind, warm and knowledgeable instructors, who promote a non-judgemental and non-competitive environment, comradery between participants, support from family and friends, beginner level classes, communication from the instructor such as emails to remind them of classes and promotional messages highlighting the benefits of yoga^{30–33}.

Conversely, these studies have also reported barriers to engagement and adverse events. For example, some participants found the yoga classes too difficult for their physical abilities^{31,33}. Personal issues, such as work or family commitments, and the times that the classes were held (e.g. around dinner time) have also been identified as barriers to

participation^{30,33}. Other barriers to engagement include preference for other physical activities, the perception that yoga lacks physical and weight loss benefits or was not for “people who look like me”, and fear of injury^{33,34}. Indeed, some studies have reported adverse events such as pain, strains and minor injuries^{29,30}.

Nevertheless, qualitative methods have highlighted the wide range of perceived benefits experienced by patients across yoga intervention studies, which are in support of, and extend, findings from previous quantitative studies and reviews. For example, reported benefits by patients have typically included improved physical health, strength, balance and flexibility; pain management; improved mental health and mood; decreased negative reactivity; increased self-efficacy; increased awareness of body and mind; self-acceptance; improved focus or concentration; and development of relaxation and other related skills^{14,30–32}. Additionally, some studies have reported positive effects on diet and sleep^{14,30}.

In summary, previous research has found yoga to have physiological and psychological effects on physical and mental health, with additional evidence that it may positively impact on lifestyle health behaviours. Additionally, it offers a low impact form of physical activity that is acceptable to a range of clinical and non-clinical populations. Barriers to uptake include attitudinal factors, concerns about physical abilities, class accessibility and lack of knowledge about the potential benefits of yoga. Yoga4Health aimed to provide an accessible yoga programme as part of the social prescribing service within West London CCG as outlined below.

1.4 The Yoga4Health programme

The Yoga4Health programme is a ten week manualised group yoga course specifically designed to provide a safe and supportive environment for participants, irrespective of yoga experience or ability. It was designed by yoga teachers and therapists with experience of working with people with mental and physical health conditions (<https://yogainhealthcarealliance.com/yoga-for-health-program/>). To enable individualised attention and modifications, the programme was designed for classes of a maximum of 15 participants.

Each session is two hours long, comprising of:

- Five minutes of psycho-education on a different theme each week which is then woven throughout the class (e.g. the importance of deep breathing techniques for relaxation)
- Approximately one hour of asana practice (yoga postures)
- Five to ten minutes of a formal practice of breathing
- A relaxation-based activity
- A group discussion involving experiences of the practice and any questions

In order to support the weekly sessions and maximise the impact of yoga practice on health, regular home practice is encouraged and supported by a range of materials, including a written course manual, videos and handouts. Participants are offered four variations of home practice each week, to provide a more individualised approach (choice of mat or chair and short or long session).

1.4.1 Delivery of pilot Yoga4Health programme

The programme was initially delivered by the founders of the programme and subsequently by experienced and qualified yoga practitioners (regulated by their professional body) who underwent specialised training to deliver the course. Yoga in Healthcare Alliance and subsequently Thrive Tribe (from Aug 2018) were responsible for overall management of the project. 22 courses, between February 2018 and May 2019, took place in community venues in the West London CCG area. At the end of the programme, information was provided on inexpensive local yoga classes to support further engagement in physical activity.

1.5 Study aims and objectives

The aims of this evaluation were to assess the acceptability, feasibility and outcomes of the West London CCG Yoga4Health programme on social prescription. Specifically, the evaluation investigated:

1. Patient-reported outcomes from the service, including stress, anxiety, depression, patient activation, social isolation, and personal well-being;
2. Patient and stakeholder experiences of, and attitudes to, the service;
3. Use and acceptability of the service;
4. Cost implications for the service;
5. Ways to improve the service.

2. Methods

2.1 Design

Frameworks to guide the development of complex interventions in healthcare advocate a mixed-methods approach to evaluate the feasibility and acceptability of an intervention during its pilot phase^{35,36,37}. For this evaluation, a nested design was used, where service users completed questionnaires of validated outcome measures at three different time-points and a subset of service users also completed individual interviews or participated in focus groups. Validated measures enable researchers to establish the effects of the intervention on target outcomes over time (e.g. on patient activation, anxiety/depression), however this does not provide insight into *how* the intervention might have achieved those effects, nor does it provide insight into service users' experiences of participating in the programme. The addition of qualitative interviews and focus groups in this evaluation therefore enabled the researchers to identify potential explanations for any observed effects. Qualitative methods enable a more personal response from individuals and so better capture the personal experiences of the intervention³⁸. Conducting this type of mixed-methodology therefore enables evaluation of the effectiveness of the intervention whilst giving a voice to participants to ensure that these findings are grounded in their experiences.

In addition, to assess cost implications a return on investment (ROI) analysis was conducted. Return on investment approaches compare the monetary benefits of a program or

intervention with its costs, producing a cost-benefit ratio³⁹. They adopt a broad concept of value, which can incorporate any social, environmental and economic impacts generated, using monetary values to represent these impacts⁴⁰. The ROI methodology is officially accepted as an appropriate method for assessing third sector value⁴¹.

2.2 Participants and recruitment

In total, 365 service users were booked onto the Yoga4Health programme and 279 attended at least one session. The programme was advertised with leaflets through GP practices, community organisations (e.g. Healthy Hearts) and outreach. The main method of referral was from bulk text message campaigns inviting targeted patients who met the eligibility criteria, which were sent by the provider (Thrive Tribe) from GP practices across West London CCG. Patients either self-referred to the programme (via leaflet, text message, community organisation or word of mouth) or were referred by their general practitioner. Further details of participant recruitment have been reported by the recruitment provider, Thrive Tribe⁴², in their report, 'Yoga4Health Project Delivery & Operations' (2019). Each participant received a telephone call to discuss the pilot and evaluation and to book a place on a course if they met the inclusion criteria.

Inclusion criteria included: mild to moderate anxiety or depression, social isolation, risk factors for cardiovascular disease (Q risk over 10%), or pre-diabetes. Exclusion criteria included: severe/acute depression and anxiety; post-traumatic stress disorder; recent psychotic episode (the last 5 years) or schizophrenia; bipolar disorder; pregnancy; recovering from substance misuse; recovering from an eating disorder; diagnoses of anti-social behaviour issues; ME/CFS; osteoporosis, osteopenia, fibromyalgia; severe or acute muscular-skeletal issues; COPD; acute asthma; kidney failure; Parkinson's disease; or cognitive impairment.

All patients who were booked onto a course were invited to take part in the evaluation. 279 attended at least session one or two of the programme and 240 (86%) completed a baseline questionnaire.

2.3 Quantitative data collection

Questionnaires, designed in consultation with our Expert Advisory Panel, were used to collect predominantly quantitative data from service users at baseline (before attending their yoga sessions), post-intervention (at the end of the yoga course) and at three months follow up. Additional open-text questions were included. Demographic data was collected by the baseline questionnaire, including age, sex, ethnicity, marital status and highest education level. Weekly attendance was recorded by yoga teachers in a register. The following data was collected at each time point:

Patient activation was measured using the Patient Activation Measure (PAM-13)⁴³. PAM includes 13 items which measure people's knowledge, skills and confidence in managing their health and healthcare. Each item is scored on a scale of 1 to 4. A total PAM score

between 0 and 100 is then calculated and the resulting score places the individual at one of four levels of activation:

- Level 1: Individuals tend to be passive and feel overwhelmed by managing their own health. They may not understand their role in the care process.
- Level 2: Individuals may lack the knowledge and confidence to manage their health.
- Level 3: Individuals appear to be taking action but may still lack the confidence and skill to support their behaviours.
- Level 4: Individuals have adopted many of the behaviours needed to support their health but may not be able to maintain them in the face of life stressors.

PAM is a validated tool⁴⁴ and is increasingly used as part of NHS England's personalised care strategy. Research has demonstrated an association between clinically significant improvements in PAM scores and a reduction in healthcare service use and lower incidence of long term health conditions^{45,46}. A change of four points or more indicates a clinically significant change.

Anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS)⁴⁷, which was designed to detect anxiety and depression in non-clinical populations. The HADS contains two separate subscales of seven items. Each item is scored on a scale of 0 to 3 and the total score therefore scores range from 0 to 21, with higher scores indicating greater anxiety and depression. HADS provides recommended cut-off scores for low (0-7), medium (8-10) and high (11-21) risk of anxiety and depression. A change of 1.5 points on each subscale indicates a clinically meaningful difference.

Perceived stress was measured using the Perceived Stress Scale 4 (PSS-4)⁴⁸. The PSS-4 is a four item measure of the degree to which participants appraise situations in their lives as stressful (over the last month). Each item is scored on a scale of 0 to 4, which are summed to give a total score of between 0 and 16. Higher scores indicate higher perceived stress. The PSS has established validity and reliability⁴⁹.

Self-rated health is a one item measure that asks respondent to rate their health status on a five-point scale from poor (1) to excellent (5). Self-rated health has been used extensively to study population health trends and has been found to predict future health problems, use of healthcare services and mortality^{50,51}.

Perceived social isolation/connectedness was measured using the Hawthorne Friendship Scale (HFS)⁵². The HFS includes 6 items which measure subjective feelings of isolation and connectedness over the past four weeks. Each item is scored on a scale of 0 to 4, therefore total scores range from 0-24. A high score represents social connectedness. The HFS provides recommended cut-off scores for: very isolated (0-11), isolated (12-15), some isolation (16-18), socially connected (19-21) and very socially connected (22-24).

Well-being was measured using the Office for National Statistics personal well-being scale (ONS-4)⁵³⁻⁵⁵. The ONS-4 includes 4 items to assess: 1) life satisfaction, 2) feeling life is worthwhile, 3) happiness and 4) anxiety. Each item is scored from 0 to 10. The ONS4 provides recommended cut-off scores for life satisfaction, worthwhile and happiness items:

low (0-4), medium (5-6), high (7-8) and very high (9-10). It also recommends cut-offs for the anxiety item: very low (0-1), low (2-3), medium (4-5) and high (6-10).

Experiences of the intervention were assessed in the post-intervention questionnaire with additional questions. Participants were asked to rate on a 5-point Likert scale (strongly disagree-strongly agree) the extent to which they perceived yoga impacted on six domains of health (physical, mental, stress, strength, sleep and lifestyle)⁷. Additional questions assessed: enjoyment of yoga4health programme on a 7 point scale (Not at all enjoyable to very enjoyable); perceived helpfulness of course materials (5-point scale from 'Very helpful' to 'Not at all helpful'); and frequency of use of online resources.

Additionally, the follow-up questionnaire asked whether participants: continued to attend a yoga class in the last 3 months ('No', 'occasionally', 'regularly'), and if not, to indicate the reason; to indicate how many days per week they typically practice yoga (home practice and classes), and whether they continued to use the course materials.

Free text responses were also collected via open-ended questions. The baseline questionnaire asked participants about the main things they hoped to get out of attending the yoga course. The post-intervention questionnaire included four open questions, which asked participants to write about: 1) any benefits they felt they had gained from practising yoga, 2) any changes to their lifestyle made as a result of attending the yoga classes, 3) their overall experience of the yoga course, such as what they enjoyed, found challenging or any improvements or changes they would like to see, and 4) any further comments they had about the course.

The follow-up questionnaire included four open questions: 1) whether there was anything that made it difficult to practice yoga after the sessions finished, 2) whether there was anything that helped them to continue to practice yoga, 3) any benefits that they were currently experiencing from practising yoga, and 4) any further comments about the course.

Cost analysis: To assess the programme's cost implications, participants were asked about their employment status and their health and social care service use (service, number of visits) over the preceding 13 weeks.

2.3.1 Procedure

An invitation letter was sent at least a week in advance of the course beginning, in addition to a welcome email inviting the patient to complete the online pre-course questionnaire. A text reminder was also sent 1 – 2 days before the course start date. If a questionnaire had not been completed, participants were invited to complete a hard copy of the questionnaire before the first class. The recruitment provider, Thrive Tribe, attended the first class of each course to assist participants with completing questionnaires and take waist measurements.

During the final class (session ten), participants were provided with an iPad or questionnaire in class to complete the post-intervention questionnaire. Waist measurements were also taken. If participants did not attend the final session, they were emailed a link to prompt them to complete the survey online. Participants were contacted up to three times each to

encourage them to complete the survey. Paper copies of the questionnaire and pre-paid envelope were posted to participants who did not have access to a computer.

Three months after the final session of the course, participants were emailed a link to complete the follow-up questionnaire. Participants who did not complete the questionnaire were contacted up to three times, first with a phone call followed by a text and then another phone call. Paper copies were posted to participants on request or if they had failed to complete the questionnaire after three attempts of contact. To increase the response rate, respondents who completed all three questionnaires were entered into a prize draw for £100 of high street vouchers. The recipient of the vouchers was selected at random using the random number generator in Excel.

2.4 Qualitative data collection

Individual interviews and focus groups were conducted with 30 service users and stakeholders to explore their experiences of the Yoga4Health programme. Semi-structured interviews enable greater depth of exploration of topics relevant to individual participants whereas focus groups facilitate group discussion of shared topics of interest and capture the personal experiences and opinions of a wider range of service users⁵⁶.

Five service users and eight stakeholders involved with the Yoga4Health programme were interviewed individually and 17 service users took part in three focus groups (N=22) (see Appendix A for participant characteristics). All service users were female (mean age = 56 years; range 28 to 82 years), with half (n=11) educated to degree or post-graduate level. Twelve participants (55%) were White, seven (32%) identified as Black or Ethnic Minority (BAME), and three participants did not report their ethnicity (14%). Of the eight stakeholders, five were yoga teachers from the programme, two were involved in programme design and one was the CCG commissioner. The majority of stakeholders were female (n=6, 75%), mean age was 43 years (range 28 to 59 years).

Interviews: Both service users and stakeholders were invited to take part in the evaluation and interviews were arranged at a time that was convenient for them. Interviews with service users took place in their own homes, local coffee shops or at the University of Westminster, and interviews with stakeholders took place in their own homes or at their place of work. Semi-structured interview topic guides were used to elicit the views and experiences of all participants. Topics for interviews with service users and stakeholders are presented in Table 1. Interviews with patients lasted from 22 to 39 minutes (mean duration 30 minutes) and interviews with stakeholders lasted from 24 to 52 minutes (mean duration 40 minutes).

Focus groups: Participants were invited to take part in a focus group at a set time and date, by telephone, email and/or text. Participants were offered a £20 voucher for their participation. Each focus group was held at centres that participants had previously attended for their Yoga4Health sessions or a nearby centre, if the former was not available. Researcher RR lead the focus groups with assistance from a Masters student for two of the three focus groups. The topic guide for the focus group was based on the guide for the

interview but was simplified into fewer questions. Focus groups lasted between 63 to 53 minutes (mean duration 56 minutes).

Informed consent was obtained from all participants and both interviews and focus groups were audio-recorded and transcribed verbatim by a professional transcriber who signed a confidentiality agreement.

Table 1. Topics for interviews and focus groups.

Interview topics for service users	Interview topics for stakeholders
Motivation for joining the course	Perceived usefulness of the programme
Acceptability	Experience of delivering the programme
Perceived usefulness	Facilitators of/barriers to the programme
Facilitators of/barriers to the programme	Type of people that attended the programme
Benefits/disadvantages of the programme	Reasons for drop out
Experience of home practice	Benefits/disadvantages of the programme for service users
Suggestions for improvement	Suggestions for improvement

2.5 Data Analysis

2.5.1 Quantitative

Quantitative data was analysed using SPSS version 25 with statistical significance set at the 5% level. T-tests and Chi square tests assessed differences between those who did and did not complete post-treatment questionnaires on demographic and baseline outcome measures. In order to compare pre- and post-treatment data, a series of repeated measures ANOVAs were conducted on the main outcome variables measuring stress (PSS), perceived health (SF-36), patient activation (PAM-13), anxiety and depression (HADS), social connectedness/isolation (HFS), and waist circumference. Post-hoc tests using the Bonferroni correction tested significant changes at each time point (pre, post and 3 month follow-up). Effect sizes were calculated using partial eta squared, using the established boundaries (small = .01; medium = .06; large = .14; Cohen, 1988). Due to violations to the assumption of normality for the ONS-4 items, non-parametric tests were used to compare pre and post-intervention scores in personal wellbeing (Friedman and Wilcoxon Signed Rank tests).

For the ROI analysis, costs included direct staffing, course and marketing costs, including the on-going programme management and data collection costs. Evaluation costs were excluded because these are only a 'one off' cost and therefore unrelated to understanding the social value of the Yoga4Health. Costs for developing and setting up Yoga4Health were

included. The cost benefits of Yoga4Health were calculated by examining cost related to any reductions in service user health and social care service use and unemployment, as well as any improvements on the PAM outcome measure. These cost reductions were calculated for a one-year period. The unit cost – cost of Yoga4Health per patient – is also examined to enable comparison with other social prescribing schemes.

2.5.2 Qualitative

All qualitative data (from questionnaire free response, interviews and focus groups) were analysed using thematic analysis⁵⁷. Initially, free-response questions were analysed individually, with the researcher (RR) immersing herself in the data by reading the responses several times. An initial list of codes were assigned to responses for each question, which were then organised into themes and subthemes. Codes and themes were then refined several times to create a coherent list of final codes and themes for each question.

Data from interviews and focus groups were analysed together, using NVIVO software. Each anonymised transcript was read several times for familiarity. The researcher (RR) actively searched for, and noted, meanings and patterns throughout the data set, which led to the generation of codes for each data item. Mind maps were then created to identify potential links between codes and possible overarching themes. This process was repeated so that codes and themes were refined and reviewed for coherence. For example, themes were reviewed for their validity in relation to the whole dataset, and themes and subthemes were reviewed internally to ensure the essence of the theme was reflected by the data and codes. Three transcripts were independently coded (by TC) to increase the rigour of the analysis and emerging themes were discussed with the research team.

Finally, the analysis of the open-ended responses from questionnaires was synthesised with the interview and focus group analysis, as there was considerable overlap with respect to both the questions asked and the codes produced from all sets of data. The themes and codes of the questionnaire data were therefore considered in relation to the themes and codes of the interview data, and vice versa.

2.6 Ethical approval

Ethical approval for all parts of the evaluation was obtained from the University of Westminster Psychology Research Ethics Committee (ETH1718-0085). An application was made to NRES Queries, who confirmed on 28.09.17 that NHS ethical approval was not required due to the service evaluation nature of the study.

3. Results

3.1 Participant demographics

Sample characteristics are presented in Table 2. The majority of participants were female (82.5%). The mean age of participants was 53 years (range 23-82 years). Half of participants were White (50%), while 40% were from Black and ethnic minority groups. Over half of participants were either single and never married, widowed, divorced or separated (57%) and over a third were married or in a domestic partnership (36%), 44% were educated to degree or post-graduate level. Just under half (45%) of participants stated they were employed or self-employed. Almost half (48%) reported fair or poor health, which is linked with higher usage of health services⁵¹.

Of those who completed a baseline questionnaire (n=240), a total of 187 also completed a post-intervention questionnaire, three month follow up questionnaire, or both (80%). Statistically significant differences were found between completers and non-completers on age only ($p=0.001$). Specifically, non-completers were younger (mean=48 years) than completers (mean=55 years). No significant differences were found for any of the other demographic variables or for baseline measures of stress, anxiety, depression, patient activation, or social connectedness.

Table 2. Sample characteristics of participants who completed a baseline questionnaire (N=240).

Gender	n (%)
Female	198 (82.5%)
Male	38 (16%)
Missing data	4 (1.5%)
Ethnicity	
White	119 (50%)
Mixed race	10 (4%)
Asian/Asian British	29 (12%)
Black/Black British	28 (12%)
Other ethnic group	29 (12%)
Total BME	96 (40%)
Missing data	25 (10%)
Marital Status	
Single, never married	82 (34%)
Married or domestic partnership	87 (36%)
Widowed	13 (5%)
Divorced	31 (13%)
Separated	12 (5%)
Missing data	15 (7%)
Highest education	
GCSE's/O Levels	34 (14%)
A Levels/college qualification	46 (19%)
Degree/post-graduate	105 (44%)
Other e.g. technical	32 (13%)
Missing data	23 (10%)
Employment status	
Paid/self-employed	109 (45%)
Voluntary work	20 (8%)
Unemployed	33 (14%)
Student	7 (3%)
House-wife/husband	31 (13%)
Retired	51 (21%)
Exempt through disability	7 (3%)
Carer	25 (10%)
Other	6 (3%)
Self-rated health	
Excellent	6 (3%)
Very Good	21 (9%)
Good	96 (40%)
Fair	88 (36%)
Poor	28 (12%)

NB: Participants sometimes selected more than one employment status so percentages do not total 100%.

3.2 Patient-reported outcomes

Summary

- Participants' health and well-being improved after the Yoga4Health programme: All quantitative outcome measures used in this study showed a statistically significant improvement immediately after the programme finished, these differences were sustained at 3-month follow-up.
- Significant increases were found for patient activation (PAM), with 62% of participants reporting a clinically significant improvement in their patient activation score.
- Participants showed significant decreases in stress (PSS), anxiety, and depression (HADS) with half demonstrating clinically significant reductions in anxiety and depression.
- Social connectedness (HFS) significantly increased after the Yoga4Health programme reflecting reductions in feelings of social isolation.
- Participants' wellbeing was also found to significantly improve with increases in life satisfaction, purpose and happiness, and decreases in anxiety.
- Physical health also showed meaningful improvements; 45% of service users reported improvements in self-rated health and waist circumference showed significant decreases.

Statistical analysis revealed improvements on a range of outcome measures after participation in the Yoga4Health course, highlighting the range of benefits for service users from the course. Analyses are based upon the 120 participants who completed all three questionnaires, presented in Table 3 (with figures in Appendix B).

Table 3. Results from Repeated Measures ANOVA showing significant changes in outcome variables.

	N	Pre-intervention		Post-intervention		3 month follow-up		Sig	Partial Eta Squared
		Mean	SD	Mean	SD	Mean	SD		
Patient Activation (PAM-13)	102	56.93	12.13	65.57	15.21	63.65	15.13	<.0005	.21
Perceived Stress (PSS-4)	118	7.27	3.47	5.25	3.01	5.70	3.16	<.0005	.20
Anxiety (HADS-14)	117	9.44	4.96	7.40	4.49	7.85	4.76	<.0005	.16
Depression (HADS-14)*	118	6.95	4.44	4.79	3.98	4.87	3.92	<.0005	.21
Social Isolation (HFS-6)	115	15.66	5.99	17.75	4.80	17.25	5.54	<.0005	.12

* The data violated the assumption of homogeneity of variances, therefore the Greenhouse-Geisser correction was applied.

3.2.1 Patient activation

Statistically significant increases in patient activation level (as measured by the PAM) were found immediately after the programme, which were maintained at 3-months follow-up (Table 3), with a large effect size. This suggests that service users felt more confident, knowledgeable, and able to manage their health after completing Yoga4Health. A change of four or more points is considered clinically significant; within the current study, there was a mean increase of 8.64 after the Yoga4Health course and 6.72 three months later. 62% of service users reported a clinically significant improvement in their patient activation score at the end of the course.

Table 4 shows the distribution of service users across levels of activation (1-4). At baseline, there was a fairly equal distribution of participants in the low activation bands (46% levels 1 & 2) and those in the high activation bands (55% levels 3 & 4). However, after the course, 81% scored as a high activator, and three quarters continued to score in this bracket three months later. Within those high activators, the majority of service users were found to be at Level 3, classified as the 'taking action' stage⁵⁸. 51% of service users increased by at least one activation level after the Yoga4Health course. This suggests that the Yoga4Health programme equipped service users with tools to increase their confidence and knowledge in managing their health and wellbeing; this has been previously been associated with decreased service use costs in terms of admission to hospital and A&E visits ^{44,59}.

Table 4. Change in patient activation level (1 to 4).

Activation level	Baseline (n)	Post-intervention (n)	3 months follow-up (n)
Level 1	23 (23%)	8 (8%)	9 (9%)
Level 2	23 (23%)	11 (11%)	16 (16%)
Level 3	44 (43%)	52 (51%)	48 (47%)
Level 4	12 (12%)	31 (30%)	29 (28%)
	N = 102	N = 102	N = 102

3.2.2 Mental Health

Statistically significant improvements were found in participants' stress levels (as measured by the PSS-4) immediately after the programme, which were sustained at 3-months follow-up, with a large effect size. Prior to the Yoga4Health programme, mean perceived stress was higher than means reported in UK-based norms (7.27 compared with 5.56 and 6.38 for males and females respectively⁴⁹). In contrast, after the Yoga4Health course, perceived stress (5.25) was below the reported norms.

A similar pattern of improvement was observed for participants' anxiety and depression (as measured by HADS). Statistically significant decreases were found for service users after the Yoga4Health course, which were maintained at 3-month follow-up, with a large effect size. Clinically significant improvement was examined using recommended figures (improvement

of at least 1.5 points⁴⁷), with half of service users experiencing a clinically meaningful improvement in their anxiety (51%) and depression (50%) after the Yoga4Health programme.

3.2.3 Social connectedness

Statistically significant improvements were found for social connectedness (as measured by the HFS) immediately after the programme and at 3-months follow-up, with a medium effect size. Prior to the Yoga4Health course, average HFS scores indicated that service users were experiencing ‘some isolation’⁵². After the course, whilst social connectedness improved by two points, average scores remained in the ‘some isolation’ category. Overall, the Yoga4Health course decreased ratings of social isolation and increased service users’ sense of connection with others.

3.2.4 Wellbeing

Service users were asked about their overall wellbeing, using the ONS-4. Significant improvements in life satisfaction, worthwhile activities, happiness, and anxiety were observed both immediately after the Yoga4Health course, and three months later (Table 5). For life satisfaction, worthwhile activities, and happiness yesterday, the mean score increased from medium to high, according to the cut offs provided by the ONS⁶⁰. Additionally, anxiety reduced from medium at baseline to low after the Yoga4Health programme, which is consistent with the findings from the HADS anxiety measure.

Table 5. Friedman Test results to show changes in wellbeing (ONS).

	N	Pre Intervention		Post Intervention		3 month follow- up		Sig
		Md	M	Md	M	Md	M	
Life satisfaction	116	6	5.97	7	6.92	7	6.69	.0005
Worthwhile activities	113	7	6.46	8	7.16	8	6.96	.0005
Happiness yesterday	116	6.5	6.21	8	7.02	8	6.84	.0005
Anxiety yesterday	115	4	4.53	4	3.83	4	3.83	.006

3.2.5 Physical health

Service users rated their self-rated health at each of the three time points. Over the course of the 10-week Yoga4Health programme, 45% of service users increased by at least one perceived health level (i.e. from fair to good), whilst a further 6% of service users felt their health had improved by two levels. This is notable given the strong relationship between self-rated health and both morbidity and mortality⁵¹. 58% of service users did not report any change in their perceived health status.

Table 6. Changes in self-rated health.

Health level	Baseline (n)	Post-intervention (n)	3 months follow-up (n)
Excellent	4 (3%)	6 (5%)	3 (3%)
Very good	9 (8%)	20 (17%)	21 (18%)
Good	51 (43%)	62 (52%)	55 (46%)
Fair	43 (36%)	26 (22%)	35 (29%)
Poor	13 (11%)	6 (5%)	6 (5%)
	N = 120	N = 120	N = 120

Waist measurements also significantly decreased after participation in the Yoga4Health course, with a large effect size, albeit with a reduced sample size. Waist size decreased by an average of 14cm from 94.82cm (37 inches) to 80.74cm (32 inches). That decrease equates to a size 18-20 to a size 14 for women and a size large to medium for men (based on standard sizes. These results were maintained at follow up ($p < 0.05$), however the use of the follow up data is limited in that measurements were self-reports, as opposed to the clinically taken measurements at baseline and follow up.

Table 7. Paired Samples T-Test for waist measurement.

	N	Pre-intervention		Post-intervention		T	Sig.	Cohen's <i>d</i>
		M	SD	M	SD			
Waist (cm)	58	94.82	16.18	80.74	26.50	4.14	.0005	1.43

3.3 Perceived Benefits of Yoga4Health for Service Users

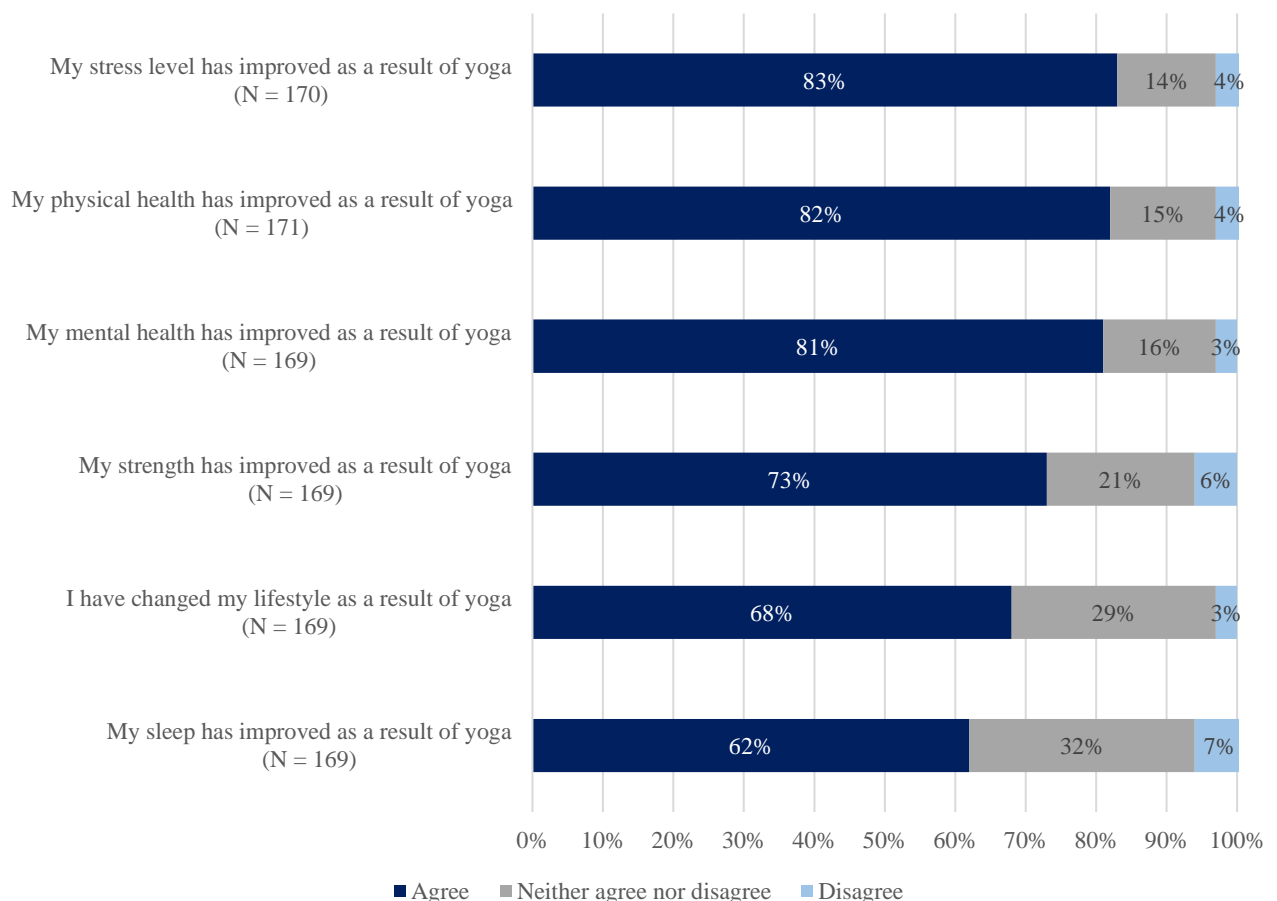
Summary

- Improvements in quantitative outcome measures for stress, anxiety, depression, patient activation, social connection, and wellbeing were echoed in the qualitative accounts of service users and stakeholders.
- Breathing and relaxation exercises were cited as key mechanisms for supporting psychological health, providing service users with a tool kit they reported finding useful in everyday stressful situations.
- Improved mind-body awareness from attending Yoga4Health was perceived to help service users to make better decisions for their physical health, including their eating, sleeping, and exercise habits.
- Group classes provided informational, emotional, and social support to service users, which was highly valued and facilitated a sense of social connection.
- Self-care and finding time for oneself was further cited as a programme benefit and given greater priority by service users.

At baseline, service users were asked about their expectations about the course. There were three main motivating factors: 1) to improve their psychological health (n = 145; 85%), such as how to manage stress, relax, or improve anxiety or depression; 2) to improve their physicality (n = 132; 77%), such as flexibility, balance, strength, fitness, or increase their physical activity; 3) improve or maintain their physical health/well-being (n = 116; 68%), such as reducing risk factors for disease (e.g. lower blood pressure or cholesterol), lose weight, improve diet, increase energy, or manage aches and pains). Additionally, participants cited wishing to: learn about yoga and related techniques, such as mindfulness; to increase self-care, including acquiring new self-care skills; and to socialise with others and/or meet new people.

In line with expectations, the majority of service users agreed that the Yoga4Health course had improved their stress levels (83%), physical health (82%), and mental health (81%). Nearly three-quarters of service users agreed that yoga had improved their strength (73%) and over two-thirds agreed that they had changed an aspect of their lifestyle as a result of yoga (68%). Lastly, 62% reported perceived improvements in sleep (Figure 1).

Figure 1. Perceived benefits as a result of yoga.



Qualitative responses further highlighted the range of perceived benefits experienced by service users. Within the post-intervention questionnaire, virtually all participants (99%) provided responses regarding benefits they had experienced and provided examples of tangible and concrete lifestyle changes they had made (96%). These benefits were echoed in

interviews/focus groups and by participants who completed the three month follow up. Responses regarding benefits were organised into four themes consistent with service user expectations: 1) psychological benefits, 2) physical health benefits, 3) social benefits, and 4) increased self-care and patient activation.

3.3.1 Psychological benefits

A third of participants in the post-intervention survey (33%) described psychological benefits. Many described feeling better in some way, with adjectives such as “awesome”, “good”, “younger”, and “healthier”, used to articulate this positive feeling. However, the most common psychological benefit reported by service users was improved stress management, which appeared to lead to increased relaxation and improved mood. Some service users reported how they had applied the breathing and relaxation techniques learned during Yoga4Health to stressful situations in their daily lives, such as the commute to work, the supermarket, or dealing with family issues. Service users described ways in which they had learned to recognise their initial stress reactions and apply techniques to help reduce their stress response. Furthermore, responses to the three-month follow up questionnaire suggested that these benefits were maintained.

“I have learnt to breathe properly and to use this mechanism to combat my stress levels...that moment of stress will pass and life goes on.” [Post questionnaire]

“I have continued to feel more relaxed, able to deal with stress better and maintain a positive attitude.” [Follow up questionnaire]

Some service users also reported how these techniques enabled them to better manage existing mental health issues, such as anxiety. Overall, the breathing exercises were reported to be most useful component of the course due to their application to everyday life, and many directly attributed the benefits they experienced to the breathing techniques. Similarly, some found the relaxation exercises particularly useful; one explained how they were quick and easy to use in her daily life when needed. Service users thus appeared to have developed a toolkit to manage issues in their daily lives. These findings are in line with the significant decreases on the validated measures of perceived stress, anxiety, and depression reported in section 3.2.2.

“I think taking away the breathing exercises and just the awareness that you get of your body, taking that away into your everyday life, that aspect of the practice I’m finding very useful.” [P5, 69 years, interview]

“Mentally, my anxiety levels each day have improved greatly. I always had an awful churned up feeling in my stomach...I have noticed that I no longer have this awful feeling.” [Post questionnaire]

This improved ability to manage stress in service users was also the most prominent benefit discussed by yoga teachers. Yoga teachers gave examples of how participants had applied their new skills in their daily lives with positive impacts ranging from improving family relationships to emotional-regulation:

“All of them pretty much described that they felt more stable and grounded from doing the practice. And most of them described that they had reacted differently to life situations in some shape, way or form whether it was family or friends or something stressful....they're more aware of things that are moving inside them so they feel the anger coming before it's taken over or they feel the anxiety present before it's there.” [Stakeholder 1]

However, one service user reported that she found the classes “daunting” as the breathing exercises served to exacerbate her anxiety.

“...It focuses on the breath and for someone like me who suffers panic attacks and rather not think about breathing, it was a quite daunting. I couldn't do the relaxation at the end because I suffer with ADHD so it was hard to do and I left by then.” [Post-intervention questionnaire]

Similarly, a yoga teacher told how one service user had a negative emotional experience during class after becoming aware of difficult emotions in relation to a recent trauma. These comments highlight the divergent experiences of some service users with existing mental health conditions.

Not only did the Yoga4Health programme help with stress and mood for most service users, many also described increased confidence. One service user commented that she had a “better self-image; more confident”. For others with complex health needs, they may have had initial worries that the classes would be too advanced for them. However, participants felt happy that they were able to “keep up” with classes, which in turn, increased their confidence in themselves and their abilities. A few participants reflected on how this had positively impacted on their identity. For example, one explained how she had not been able to practice yoga in years due to her chronic fatigue and so participating in the programme made her feel like her “old self”. Another discussed how she had purchased a pair of shiny leggings to wear to class, which reminded her of her youth when she wore similar leggings to dance classes. Helping service users to become physically active again may therefore bolster their sense of identity.

“I got a lot of confidence back because when I first started doing it, I couldn't keep up. And I was with people who... like this couple of old nurses who were in their eighties and they were getting on right through this ...and I would sadly lie down on the mat and wait, but I just kept going and by the end I was keeping up with everyone doing it so I really, it was very good, and it was, as I say, it was like coming home, it was like all these things that I hadn't been doing, and I'd stopped doing the yoga. It was brilliant, I mean, it was great.” [P1, 63 years, interview]

3.3.2 Physical health benefits and improved physicality

Nearly a quarter (24%) of service users who responded to the post-intervention questionnaire described the positive effects of the Yoga4Health programme on their diet and eating habits, which was further elaborated on within the interviews. Service users'

described awareness of their bodies, which in turn, drew their attention to their health and consequently, their diet and related habits.

“There’s no point in going to yoga and then going and having spaghetti bolognese and three cakes and so it made you more aware of your body and what you were eating and how you were living. I genuinely believe that.” [Focus group 2]

Service users talked about how they became more aware of their eating habits and were able to change to healthier habits by reducing junk food and increasing fruit and vegetable consumption. Since practising yoga was seen as beneficial for health, unhealthy eating was seen to undermine practice. As a result, some participants described losing weight or reducing body fat content. Although less frequently reported than other benefits, this is supported by significant reductions in waist circumference (section 3.2.5).

Service users reported further improvements for their physicality including improved “flexibility”, “balance”, “mobility”, “posture”, “strength”, and general “fitness” attributed to the practise of yoga postures. Some participants also reported reduced aches, pains, and stiffness. Certain yoga poses, and the knowledge of which poses help certain aches and pains, were credited with these benefits for physicality:

“When I have a specific pain or injury, I now know which are the best poses and stretches to do.” [Follow up questionnaire]

Other service users described an overall increase in their levels of physical activity, including increases in yoga, walking, or running; where service users were “more active than before” or “more willing to go out jogging”. Some described how they had continued to practice yoga to maintain the physical health benefits experienced:

“I mean, I go to three [yoga classes] a week now... when they stopped over Christmas for two weeks, my body practically seized up, I got really stiff.” [Focus group 1]

Other physical health benefits included improved sleep and increased energy, which in turn, may have impacted on mood. Some service users directly attributed the positive changes in sleep and energy to the breathing and mindfulness exercises of the course. For example, one service user told how she used breathing techniques to help her to go back to sleep upon waking, which improved her overall sleep pattern. Others commented on more chronic sleep problems:

“My insomnia is almost gone. I have a few nights every now and again when I don’t sleep.” [Follow up questionnaire]

Yoga teachers’ accounts of service user’s reports about their experienced benefits further support some of these findings. For example, yoga teachers told how some service users had experienced improved balance and flexibility, and one stakeholder reported how some service users had also lost weight.

“I only can pass the feedback that my students give me because we have this gathering time at the end which is very wonderful, it’s just amazing. And every, today for example, just from today, someone mentioning the balance, someone went, “Oh me too!”, so, yes, were commenting on balance, feeling more flexible.” [Stakeholder 2]

3.3.3 Social benefits

Whilst social benefits were not heavily cited in the post-intervention questionnaire, the interviews revealed that attending the Yoga4Health course created feelings of social connectedness. Service users explained how they preferred the group class to practising at home as they enjoyed being with liked-minded people, with some having formed friendships with their peers. They further described how they found value in hearing other people’s experiences but also sharing their own, both of which were facilitated by the group discussion at the end of classes. This resulted in a “community feel” and served as a “bonding experience” for participants.

Overall, the group element of the Yoga4Health programme appeared to act as vehicle for informational, emotional, and social support. In the baseline questionnaire, only a minority of service users had stated that they hoped to meet others and socialise. However, many service users reported experiencing social benefits, and moreover, appeared to value them greatly. These qualitative findings support the significant increase on the social connectedness measure reported in section 3.2.3, where service users felt more socially connected following completion of the Yoga4Health programme.

“I felt that I was in a very caring environment ...And a very warm environment. And I found myself, I’m quite often very cynical and what have you, and I’m quite judgemental as well, and I found myself actually being kind (laughs) and thinking such things as, actually, what a lovely group of people.” [P5, interview]

Interestingly, yoga teachers also observed social changes in the group. For example, they told how the groups appeared to become more comfortable with one another at each class, by becoming more talkative and sharing their personal experiences. One yoga teacher described how relationships began to form between the members of the group, as well as between the service users and the teacher:

“At the beginning the first week everyone is very quiet, no one wants to share much...but then you see that they open up so much and they like to share and so it’s wonderful to see this social bit of this yoga programme, how people get more and more comfortable.” [Stakeholder1]

3.3.4 Self-care and patient activation

Some service users reported how yoga classes made them realise the importance of self-care and told how it felt good to do something for themselves, especially for those who spent so much time doing things for others, such as caring for children or relatives. The Yoga4Health programme encouraged service users to take “time out” or “make time” for

themselves. Consequently, after the course, service users felt more able and confident to prioritise their own health.

“What it made me do was reassess my life and how important actually I am, and how I need to give myself something...I reassessed my life basically, and how important it was for me to find time for me to do stuff. To be a bit more autonomous in my own healthcare. Things that I’ve been niggling, like I’ve had a pain in my hip for quite a long time and I’ve never gone to the doctor with it because I can’t face the battle...”
[Focus group 3]

Illustrating the increases in patient activation demonstrated in the PAM measure findings, one service user talked about dealing with medical issues that she had previously put off. As described previously, service users developed a range of new skills and knowledge, and increased their confidence in a range of ways, which may have contributed to the increase in patient activation. Service users themselves spoke about the benefits of this for healthcare services, where they felt more able to self-manage.

“The main benefit has been the recognition that I can improve my health and mostly my mental health by using mindfulness, yoga, and meditation to keep me away from the GP.” [Post-intervention questionnaire]

3.4 Service Users’ Experiences of Yoga4Health

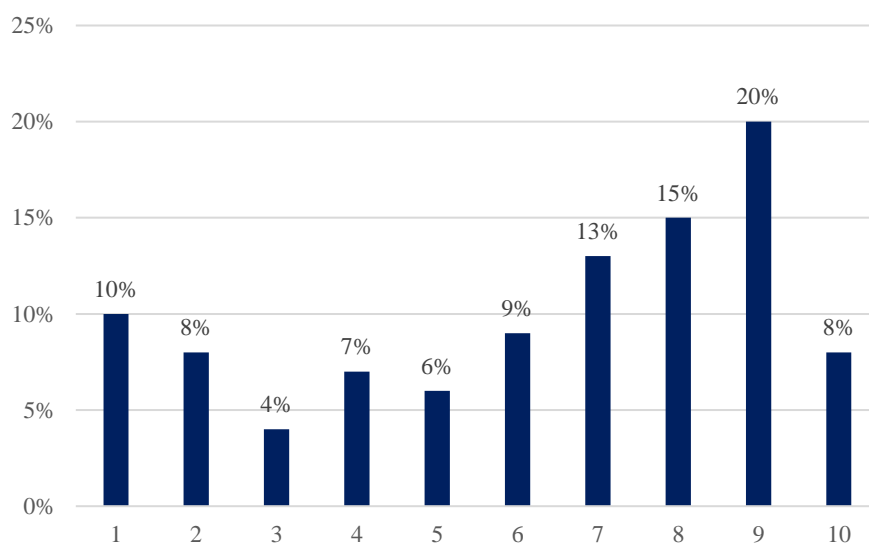
Summary

- The Yoga4Health programme was perceived as acceptable and appropriate for a wide range of abilities by both service users and stakeholders. Although less frequently reported, negative feedback primarily related to the time commitment required for yoga or dislike of specific components of the course.
- Having local, free classes, which were affiliated with the NHS were important facilitating factors for service user attendance.
- Service users reported high enjoyment of the course, which improved engagement. The inclusiveness of the yoga teachers and the supportive group dynamic were particularly valued. Barriers to enjoyment related to venue issues, such as lack of heating or limited equipment.
- The majority of participants found the programme resources including the course manual, home practice sheets, and home practice videos, useful. These resources had the benefit of enabling service users to recap what they had learned (or missed) in class and progress in their yoga postures outside of class. However a minority of participants were unable to access the online resources due to technical or computer literacy reasons.

3.4.1 Attendance and Acceptability

Overall, participants attended an average of 6.22 classes over the ten week programme. 71% attended at least half the sessions and 43% over three quarters of the classes.

Figure 2. Yoga4Health class attendance.



Overall, qualitative data from questionnaires, interviews and focus groups indicated that service users found the Yoga4Health programme acceptable. Almost all service users found the classes easy to follow and perceived the pace and instructions to be suitable for beginners, though some reported that some elements were initially challenging (e.g. some poses or breathing exercises). The programme was found to be acceptable to service users with a range of experience (i.e. no or limited experience of yoga), ability, and those with health conditions, which was facilitated by modifications to postures to suit individual needs and abilities.

The interview and focus group data highlighted that some service users held beliefs that yoga was suitable only for slim, young, mobile, and healthy individuals, thus had previously avoided yoga. However, the affiliation of the Yoga4Health programme with the NHS, as well as receiving a personal invitation to attend the programme, meant that service users believed it would be suitable for their needs and abilities. The course being free and in close proximity to service users' homes contributed to its overall acceptability. Some service users drew comparisons with other existing community yoga classes, which were seen as too expensive, intimidating, or mainstream (i.e. not personalised or adaptable for health conditions or limited mobility).

"I'd always been fascinated by yoga, and I always wanted to try yoga. I always thought my build, my size, my age, I wouldn't ever be able to. I'd left it too late probably in life to try it anyway. So I went on the 'Healthy Hearts' course, and as part of that, they had an exercise regime at the end of the session. And then, I can't remember the lady's name, came to the class that I was doing at the Healthy Hearts and said, "We're doing Yoga4Health, would anybody like to sign up?" So I put my hand up." [Focus group 1].

Yoga teachers delivering the programme also perceived the course to be well designed and acceptable for the range of service users in attendance, and were advocates for the wide range of potential benefits for this population. These perceptions were grounded in the feedback provided by those who attended their classes, as many service users discussed their experiences with their teacher.

“The people that do it, their feedback is great, so. And me doing the practise in my own time to know what that practise is like, it’s a really bloody good practice. It’s really effective...The design of how they took people through the progression of what they learnt was excellent. It went beyond my expectations of what the course was going to be...” [Stakeholder 1].

In contrast, a small number of service users reported more negative perceptions about the course. For example, one service user who perceived herself to be fit and active, despite her cardiovascular condition, found the classes to be “repetitive”, “static” and “boring” and therefore unchallenging. Two other service users reported that they left each class early as they did not enjoy the relaxation component at the end, and another didn’t feel able to complete the breathing and relaxation exercises. Other negative perceptions that were reported included not being able to relax in the group environment and perceiving yoga as ‘just not for me’ as a physical activity.

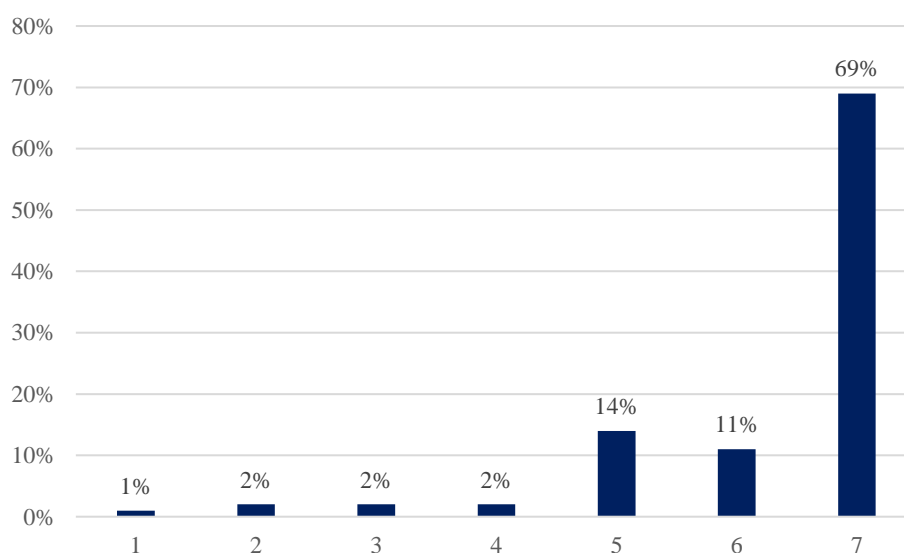
Other service users commented on the timing of classes and the time commitment needed from them as a disadvantage. The timing of the classes was seen to be problematic by some who could not attend due to scheduling constraints, for example not being able to get time off work to attend. Others, however, highlighted the sheer time commitment needed from them as challenging in comparison to other methods for managing health and wellbeing:

“The time commitment compared to popping a pill is a challenge and it is very hard to commit so much time in an already busy life.” [Post intervention survey]

3.4.2 Facilitators and Barriers to engagement

Given the acceptability of yoga classes, it is no surprise that service users reported high enjoyment of classes. The mean enjoyment rating was found to be 6.36 (out of 7). 69% of service users rated classes as very enjoyable, whilst a further 25% rated classes as a 5 or higher. Consequently, 94% of service users had very favourable views of their enjoyment of yoga classes. However, this may reflect a bias towards those more likely to have positive views of the programme who completed the post-intervention questionnaire.

Figure 3. Perceived enjoyment of yoga classes (N = 169).



Many service users reported in the questionnaires that they thoroughly enjoyed the programme, describing it as “enjoyable”, “useful” and even “life-changing”. Service users described how they “looked forward” to their weekly yoga classes. Many expressed gratitude for being able to take part and experience a range of benefits. Subsequently, many service users and stakeholders hoped that the programme would be available to others through the NHS:

*“I have found the course to be a unique and powerful experience. I was really surprised at how much I enjoyed it and looked forward to the sessions.”
[Post-intervention questionnaire]*

The qualitative data shed further light into key facilitators of the programme; namely the skills and qualities of the yoga teacher, the group environment, and the usefulness of the course resources.

Firstly, many service users cited the personalised, inclusive approach of the yoga teachers as key to their enjoyment of sessions; service users acknowledged that teachers made “everyone feel included”. They described and praised the personal qualities and skills of their yoga teachers, which appeared to facilitate adherence to the programme, describing teachers as “supportive”, “caring”, “dedicated”, “encouraging”, and “knowledgeable”. Adaptations and alternative exercises for those with medical conditions or limited physical abilities meant that service users felt able to try even challenging postures.

“It was very easy to follow, because the instruction was so good...There are people who can teach and there are people who can’t, and she just had that outgoing, friendly, interested in her class, concerned, good at demonstrations. Yeah, just good teaching is really important, and I think she created that atmosphere of togetherness...While we were there together, I had a feeling of it was quite a unit. And that was teacher creating that.” [P2, 82 years, interview].

Yoga teachers acknowledged that building a relationship with the group was important for the enjoyment of classes for service users and themselves. Rapport was built in various ways, for example, one teacher talked about using humour in the class when service users weren’t able to achieve certain postures. Communication with service users and being available were also identified as strategies to build the teacher-service user relationship. Through increased communication with service users, yoga teachers were better able to adapt the script and/or postures and exercises to suit the individual needs of the group. This skill appeared important to engender an inclusive approach within classes.

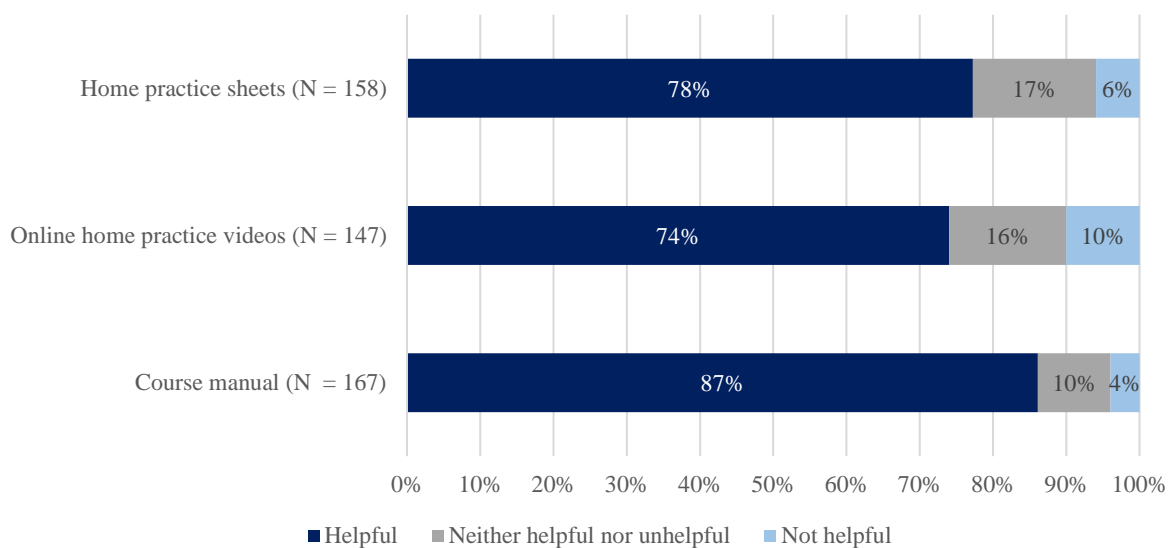
Service users also highlighted their enjoyment of the group dynamic both for its practical and social encouragement. The vast majority of participants reported a preference for practising yoga in a group compared to practising at home. Classes provided several advantages over home practice: firstly, service users valued the protected time to practice yoga without distractions. Secondly, they felt they lacked the discipline to practise alone at home and/or felt they didn’t have the time. Thirdly, some service users reported increased motivation to practice yoga in class because the session was pre-arranged and the teacher provided encouragement. Others told how they felt they had to ‘keep up’ with others in

class, which also increased their motivation. Finally, the class provided the instruction of a teacher and therefore the opportunity to ask questions and have yoga postures corrected. Moreover, service users enjoyed hearing about others' experiences of yoga, as well as getting to know their peers on a personal level.

“It was nice to sit around and just hear people’s experiences and share that, yeah. And I have a tendency to want to talk a lot, and I found myself just sitting back and listening, but that was the effect of being in the yoga class. It was interesting to hear people’s different experiences...and to get to know them a little bit better.”
 [P5, 69 years, interview]

In addition to the praise for the teachers and the group environment, service users found the course materials to be a facilitating factor in their experience and enjoyment of the Yoga4Health programme. Overall, service users who completed the post-intervention survey found the course manual the most helpful resource, with 87% stating this was very or somewhat helpful. Approximately three quarters of service users also found the home practice sheets (78%) and the home practice videos (74%) somewhat or very helpful. The most commonly used videos were the mat practices (44% used the long version and 29% used the short version).

Figure 4. Perceived usefulness of programmes materials.



Irrespective of resource preferences, each offered the benefit of enabling service users to recap what they had learned in class, progress in their yoga postures outside of class, and enabled them to catch up if they missed a class:

Interviewer: Was there anything else that you think made the classes easy to follow?
Participant A: I think video as well. So at home, you go over basically what you’ve done, but it’s sort of like requirement, so you go over it...
Interviewer: You used the videos to recap what you’d done?

Participant A: Yes, because the video's OK. And you could pause it and have another look, so that video was really, I think that was the best thing, having those videos.

Interviewer: Did anyone else use the videos or manuals in the evening to recap what they learned?

Participant B: I choose the manual, just because I wanted to, because I was doing the stretching and that, I wanted to make sure, like, I was doing my warriors properly.

Those sort of things. [Focus group 1]

Service users generally reported liking the flexibility of home practice (where the resources were most useful), however they reported that they tended to practice the breathing practices with increased frequency over the physical postures as they were easier to fit into their routines. This may account for why over a third of service users (34%) stated that they did not use the online videos.

"I found it easier to practice the breathing rather than the postures. I did do on some days but not as often as the breathing." [Focus group 3]

However, there were also a minority of service users who were unable to access the online videos, either due to lack of Internet access or limited computer literacy. Additionally, some service users found the manual to be confusing and there were comments about the presentation of the course materials, which some perceived to be of inadequate quality. One yoga teacher highlighted the case of an older service user who found the "combination of accent and background noise difficult to follow" (S6) within the videos.

Other barriers to enjoyment and engagement included issues around suitability of the class venues. Many complained that the venues were too cold to practice yoga, especially for those who suffered with pain and related ailments. For example, one service user told how she was in "great pain... which was dreadful" during the classes due to the low temperature of the venue caused by "a window that was open that wouldn't close" [focus group 2]. Some service users took blankets or wore extra layers of clothing to compensate for this, however others were deterred from attending. Additionally, there were some reports of limitations relating to venue size or insufficient equipment, such as straps and blocks. This was highlighted by one yoga teacher:

"If everybody who was meant to have turned up had turned up, we could not have fitted in there. One other thing was that there weren't really enough props. Given that this is a mixed ability class, I had to ask to have blocks and in one of the classes there were insufficient blocks. And things like there are some exercises where we're meant to be using belts or, and I got people improvising with scarves and things but it's not the same." [Stakeholder 6].

3.5 Continuation of yoga practice

Summary

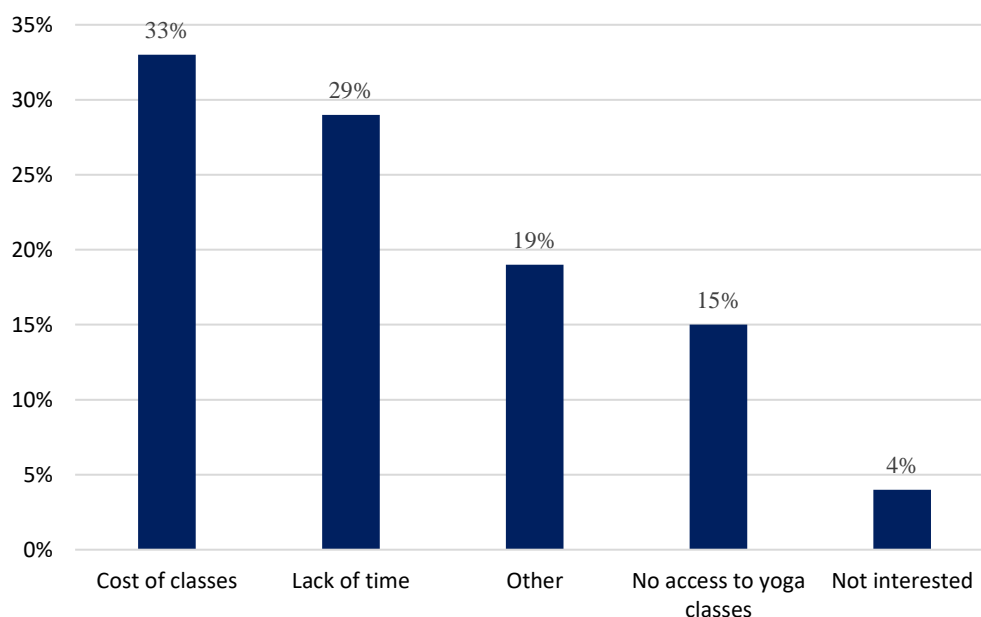
- Three months after completing the Yoga4Health programme, service users reported practising yoga an average of 2 days per week – including attendance at another yoga class or through home practice (using Yoga4Health course resources).
- Barriers to continued yoga practice included: time pressures, lack of access to a suitable class, and the cost of community classes.
- Motivation to continue yoga practice came from a desire to maintain the benefits from the Yoga4Health course, finding another local class to attend, or the continued support of peers from the programme.

In the 3 month follow up questionnaire, service users were asked about their yoga practice since the classes ended. Overall, between those who continued to attend classes and those that engaged in home practice, it was found that service users practised yoga on an average of 2.10 days per week. Furthermore, 44% of service users stated that they either regularly or occasionally attended a yoga class within the intervening 12 weeks.

Whilst continuing to attend yoga classes was not feasible for all, participants reported continued use of the materials and resources given to them in classes to aid home practice. Approximately half of service users continued to use the home practice sheets (51%) or the manual (49%), with slightly fewer (44%) reporting using the online videos.

Of the 56% who reported they had not attended a yoga class in the last 3 months, service users were asked about barriers to practice (Figure 5). A third cited the cost of classes as a barrier to continuing to attend yoga classes, whilst 29% cited time restraints. Almost a fifth of service users reported that there was another barrier preventing their attendance.

Figure 5. Barriers to attending yoga classes (N = 79).



Barriers and facilitators to practice were further elaborated in the qualitative findings. Four key barriers were identified: 1) practical barriers, 2) financial barriers, 3) health barriers and 4) lack of structure.

Lack of time was cited as one of the main barriers to continuing yoga. Participants described various responsibilities, relating to family, caring commitments, and job roles which made continuing with yoga more difficult.

*"A heavier workload and being a carer. My mother has been very unwell."
[Follow up questionnaire]*

Additional barriers included not being able to find another suitable yoga class and the cost of available classes. Some participants did not know if or where there were suitable yoga classes, or were discouraged by class location or cost. For other service users, there was a perception that there were not any local classes that would meet the needs of individuals with complex needs:

*"[I] found it difficult to find a class appropriate to my needs. I have a knee injury. Most classes don't cater for people with mobility problems."
[Follow up questionnaire]*

Physical health and mental health issues also prohibited some service users from continuing to practise. For example, some were impeded by pain or injuries, whilst for others, their mental health affected their practice:

*"I fell into a slight depression and then just didn't continue."
[Follow up questionnaire]*

Additionally, "losing the structure" provided by a group class created challenges for the continuation of yoga. Service users felt that not having "dedicated time" for yoga and the lack of the social aspect within classes were factors that made it difficult for them to maintain their yoga practice. Some felt that without these things they simply "fell out of the habit" of practising yoga.

Other practical barriers included not having space at home to practice, finding yoga "demanding" or "difficult", or not liking yoga as a form of exercise. Finally, some service users stated that "lack of motivation" was a barrier to continuing yoga practice, and it is likely that some of this may also be due to the lack of access to group classes, given the related comments.

However, the qualitative data also revealed a number of facilitators, which helped to sustain service users yoga practice following the Yoga4Health programme. These fell under three broad categories: 1) psychological, 2) practical and 3) social facilitators.

Psychological facilitators included wanting to maintain the benefits they had experienced during the course, the desire to be healthy, and feeling like they had formed a "habit" of practicing yoga over the ten week programme. Service users wanted to sustain the

improvements to their “mood”, “energy levels”, “body shape” and the “sense of calm” they had experienced.

“I know how beneficial practicing yoga has been/is for me so that motivates me to continue to practice.” [Follow up questionnaire]

Practical facilitators included having found another local yoga class to attend, having the free time to practice yoga, and using the course materials for home practice. For instance, service users who were retired articulated that they had more time to dedicate to practice. Even for those who were unable to find another class, the course materials allowed service users to “pick a lesson to suit [their] mood” in the comfort of their own homes.

Social facilitators included having made friends on the programme and continuing to practise yoga with them. The relationships formed within the Yoga4Health course appeared to encourage continuation of practice within the social boundaries that were already established. For instance, some service users found new classes to go to together, whilst others practiced yoga at home in groups together.

“The enthusiasm of class members- we now meet every Tuesday evening and practice yoga together.” [Follow up questionnaire]

3.6 Stakeholder Challenges

Summary

- Stakeholders discussed a range of practical challenges within the delivery of the Yoga4Health programme, which may provide learning for future roll out of similar programmes.
- Yoga teachers reported needing a high level of knowledge and skill to deliver Yoga4Health to service users with a range of needs and abilities. Training and ongoing support were important enablers for successful delivery of the programme.
- Engaging group members could be challenging at times, especially where there were high levels of drop-out or pre-established group dynamics impacted upon the course delivery.
- Lastly, recruitment issues were identified, specifically in terms of eligibility criteria and the recruitment of vulnerable or marginalised groups.

Yoga teachers and other stakeholders reported some challenges in response to the implementation and delivery of the Yoga4Health programme. These related to the adherence of service users, the amount of training and preparation required to deliver a manualised programme, group dynamics and the challenges around recruiting vulnerable service users.

In relation to adherence, yoga teachers cited gradual drop out of the classes over time or missed sessions as a challenge. Service users provided reasons for drop out, such as illness

or holidays. Whilst most anticipated this level of attrition, and perceived it the norm, this could also impact on the yoga teacher's confidence – “you take that quite personally” (S1). In order to increase adherence and build the teacher-student relationship, yoga teachers contacted service users by email or telephone prior to or after classes. Whilst this was highly valued by service users, yoga teachers reflected that this could be challenging to manage and also expressed concerns that this might impact on patient agency:

“Lots of people were emailing me about lots of things, which was really nice, because we bonded, but I did feel as though the, it was hard to not cross a boundary at all. You want to talk about the course and be friendly, but you don't want to then, them to then become reliant on you. ...Which is something that yoga teachers are used to anyway, but obviously it's even more important when you're dealing with NHS patients.” [Stakeholder 4]

Yoga teachers also described how learning to deliver the Yoga4Health programme was a significant undertaking. Teachers were given a core script to deliver the programme and so had to memorise a lot of information, which could feel “overwhelming”, particularly in the early stages of delivery. Furthermore, delivery of Yoga4Health required further planning and adaptation to adjust the programme to meet individual needs, backgrounds and differing abilities.

“...there is a script that the program has, but if you look around and you see that actually people aren't getting it, then you need to come at it a slightly different way, so you need to know when to adhere to the script and when to begin to use a language that you think might meet them.” [Stakeholder 3]

Consequently, ongoing training and support was crucial for the yoga teachers. One teacher told how access to on-going support was key to feeling and being perceived as confident and knowledgeable to service users.

“Of course until you start teaching it, is when you really, you can have more questions arising, that's why it's so important that we have always access to [programme leader], for example we always can contact her and if there's anything were not sure about she's always going to back up us. ...You need to feel very confident because these people, the students, they really want to know that you know what you explain when you're teaching...” [Stakeholder 2].

As well as the quantity of information, one yoga teacher discussed finding it difficult to override his personal teaching style in order to deliver the programme as intended, in a standardised way. When interviewing one of the programme designers, this issue was acknowledged as a potential ‘tension’ between the programme protocol and the personal style of the yoga teachers.

“This style of teaching is very therapeutic. So if you're not a therapeutic teacher or used to it it's going to be abruptly different to what you're normally used to and you'll have to adapt quite a lot.” [Stakeholder 1].

Some yoga teachers described issues surrounding managing diverse service users with a range of different needs. Teachers expressed concerns about service users who had 'slipped through the net' of the eligibility criteria and presented with challenging comorbid conditions which might "need somebody a bit more one on one before accessing the course" [S1]. Despite the added difficulty of having more complex cases in the class, it was largely felt that such service users benefitted from their engagement. The broader implications of the eligibility criteria were also discussed in relation to referral processes since "the GPs found the referral criteria too restricting" [S7] which was perceived to impede their willingness to refer patients to the programme.

Managing group dynamics was also expressed as initially challenging, particularly with managing already established community groups. For example, Yoga4Health was delivered to an established cultural group that met socially on a weekly basis; the teacher related how it posed additional challenges to gather and focus the group's attention in order to conduct the class as intended. Additionally, not all members of the group participated in the yoga which was often distracting for those taking part in the class. Thus additional expertise may be required to manage specific groups or those with more complex needs.

Finally, the recruitment of service users from ethnic minority groups or those of low socioeconomic status was seen as a practical challenge for the implementation of the programme across West London Clinical Commissioning Group. Face to face relationship building and having a reputable provider with access to patient details through GP practices were perceived as key to successful recruitment. Local knowledge and established, trusted relationships with local community groups and using local teachers was seen as particularly important in terms of accessing hard to reach groups, though it was recognised that this takes time to embed into programme delivery. Taking part in an evaluation was also perceived as a potential barrier for some groups; additional support to complete evaluation materials was required for service users with low English literacy and future research might consider alternate approaches, such as focus groups, to ensure engagement and representation of hard-to-reach groups. Despite these challenges, at least 40% of the sample were from BME groups.

"I think for the future going forward, it would have to, whoever took on this contract or delivered it would have to have local knowledge or have very clear plans on how they would do this locally. So, did we actually get to the people who wouldn't normally do yoga? And I think we only did that via the bespoke tailored ones to actual closed groups. I think you need internal champions within those minorities. I think that you need people that have done the programme coming from different kinds of backgrounds, socioeconomic brackets, to be the champions." [Stakeholder 7]

3.7 Cost implications

3.7.1 Return on investment analysis

The ROI ratio for this project was **£2.19**, that is for every £1 spent on the project there is an associated saving of more than double that which was invested. This is a very similar ROI to those reported on other social prescribing projects reviewed by the Social Prescribing

Network⁶¹. This ROI was calculated by examining the costs and savings associated with the project:

Costs associated with the project: Each Yoga4Health course delivered by Thrive Tribe cost £4655, over 16 courses this produced a total of £74480 for course delivery. One-off set up costs and the initial 6 courses delivered by Yoga in Healthcare Alliance totalled £32000. Thus, total costs associated with the project were £106,480.

Cost savings associated with the project: Reductions in service user health and social care usage and unemployment, as well as improvements in the PAM outcome measure were found after Yoga4Health. These changes were monetarised as per calculations shown in Table 8, producing a cost saving of £58,332. Applying these savings to the standard 12-month period produces a total cost saving of £233,328.

Table 8. Cost savings associated with Yoga4Health.

Impact	Evidence for value from source	Value for ROI (£)
GP attendance	82 (n=142) fewer visits. Each appointment costs £38. Source*: https://www.pssru.ac.uk/project-pages/unit-costs/unit-costs-2019/	3,116
A and E attendance	24 (n=138) fewer A and E visits. Each attendance costs £160. Source*: NHS England https://improvement.nhs.uk/documents/1972/1 - Reference costs 201718.pdf	3,840
Other hospital attendance	26 (n=31) fewer other hospital visits. Average cost of a day case is £742 Source*: https://improvement.nhs.uk/documents/1972/1 - Reference costs 201718.pdf	19,292
Talking Therapy attendance	16 (n= 16) Average unit cost of mental health failure £168 Source*: https://improvement.nhs.uk/documents/1972/1 - Reference costs 201718.pdf	2,688
Social Services visit	4 (n=2) fewer social service visits. The average cost of a social work visit is £159. Source*: https://www.ncbi.nlm.nih.gov/books/NBK409325/	636
Patient Activation	Improvements on the PAM: 1 point n=55; 2 points n=15; 3 points n=3 (n=158) Based on values calculated by: Hibbard et al. (2013) ⁵⁹ , converted to UK values ⁶² .	22520
Employment	4 more people in paid employment. The economic costs to the chancellor of the exchequer of one person being unemployed for one year in terms of benefits and lost tax revenue is £6,243 per annum making a quarter figure of £1,560/per person. Institute for Public Policy Research https://www.ippr.org/	6240
	Total return – 3-month period	£58,332
	Total return – 12-month period	£233,328

*Sources accessed 30th November 2010

Note: n-values represent the number of participants responding to the question - participants were not required to respond if they had not used that service.

3.7.2 Unit costs

The Yoga4Health project unit costs going forward (i.e. not including set up costs) are predicted to be **£307.76/patient**. For comparison, other social prescribing scheme unit costs have been reported to range from £235 to £301 per patient^{63–65}. However, these schemes benefit from scale in reducing cost: Yoga4Health had a lower throughput of patients resulting in higher unit costs compared to these larger CCG wide initiatives. [A full report of the return on investment analysis (Kimberlee, 2019) is available on request]

4. Conclusions

This evaluation assessed patient-reported outcomes, acceptability, and overall feasibility of the West London CCG Yoga4Health programme on social prescription. This included investigation of patient and stakeholder experiences of, and attitudes to, the service, the cost implications and identification of ways to improve the service. The evaluation found statistically significant improvements on all outcomes from pre to post-intervention, all of which were sustained at three months follow-up, as well as clinically meaningful changes in patient health and well-being. These findings therefore suggest that Yoga4Health is able to help at-risk patient populations to increase patient activation, feelings of social connectedness, self-reported health and wellbeing, and reduce waist circumference, perceived stress, anxiety and depression. Associated costs and return on investment appear to be similar to other social prescribing schemes.

The qualitative component of this evaluation found that the vast majority of service users perceived Yoga4Health to be an acceptable and highly enjoyable experience. Qualitative data was able to explore more deeply how changes demonstrated quantitatively may have occurred. For example, relaxation and breathing techniques learnt on the course were reported as being particularly useful in everyday stressful situations, and improved mind-body awareness that arose from practicing yoga supported participants to make healthier life choices. Minimal disadvantages were reported, however, those completing questionnaires and attending an interview or focus group may have had more favourable views about the programme. Yoga teachers also perceived the course to be well designed and were convinced of the benefits for the service users, though initially, some teachers found the course challenging to deliver.

A number of factors supported service user engagement with the Yoga4Health programme. Service users felt that the positive personal qualities and skills of the yoga teacher, supportive group environment, and the course materials were all important for their enjoyment and continued motivation. For yoga teachers, the facilitators included adapting the programme to meet individual service user needs, creating an inclusive and comfortable environment for service users, regular, personalised communication, and having previous experience of managing groups with complex needs. However, a range of practical, physical and psychological barriers to attendance and home practice were identified by service users, and many found it challenging to continue practising yoga after the course had finished. Nevertheless, more than half of participants had begun attending new yoga classes or continued with their home practice three months after the end of the programme. For

yoga teachers, challenges of delivering the programme included service user adherence, the amount of training and preparation required to deliver the programme, and managing groups with diverse and often complex needs and abilities. The training and ongoing support that they received to deliver Yoga4Health was therefore highly valued by yoga teachers. Additional implementation issues related to referral mechanisms and the importance of local providers to engage hard-to-reach populations.

4.1 Recommendations

Based on the findings of this evaluation, the following recommendations are suggested to improve the programme for future delivery:

Implementation recommendations:

- The use of an established local provider with knowledge of local venues and access to patients through general practices, community groups, health organisations and charities, is recommended to ensure successful recruitment of diverse service users.
- Yoga4Health can be successfully implemented with hard-to-reach groups, but requires local champion engagement (e.g. implementing with pre-existing cultural groups) and an experienced yoga teacher to deliver classes. In addition, service users may need additional support to complete evaluation materials and future evaluations should consider alternative methods (e.g. interviews or focus groups) to ensure these groups views are included.
- A review of the inclusion and exclusion criteria for the programme is recommended in order to consider the suitability of patients with complex needs as well as implications for the referral process (e.g. not too complex for referrers).

Improving the programme for service users:

- Ensure class venues are suitable, particularly in terms of size, adequate temperature, facilities and equipment.
- Consider improving the quality of online home practice videos and manual e.g. improved audio in videos and review manual for fluency/comprehensibility for those with low literacy.
- Provide service users with information on the potential adverse effects of yoga, such as tiredness, experiencing negative emotions or injuries. Consider incorporating skills training to help service users to cope with difficult emotions that may arise during classes.
- Improve support to service users to continue their practice once the programme has finished, for example improve signposting to local yoga classes following the completion of the programme (i.e. classes that are free or low-cost, close by, and suitable for those with health conditions and/or limited mobility). In addition, class discussion time may be used to encourage users to identify and set goals for practice continuation.

Programme delivery and teacher training:

- Experienced yoga teachers are required to manage the complex needs and dynamics of these patient populations, particularly in already established/closed community groups.
- Continue to provide on-going access to expert support for these yoga teachers during the programme, especially during the initial sessions.
- Provide clear guidance to service users regarding appropriate teacher contact outside of sessions i.e. within specified hours.

In conclusion, we found that it is possible to effectively develop a yoga intervention for a diverse group of NHS patients that can be delivered within an NHS social prescribing pathway. This kind of intervention appears to be acceptable to at-risk patient groups, as well as GPs and community groups who are willing to support referral and delivery. Yoga programmes for specific patient groups can provide physical activity and well-being support for those who may be lacking confidence to attend other more generalised exercise and well-being programmes, and is likely to offer a range of physical and mental health benefits.

The Yoga4Health programme is starting to be delivered in other areas of the country. In further developing the programme, this evaluation confirms the importance of having experienced and supported yoga teachers and a provider with local knowledge to access diverse patient groups, it also provides recommendations for future delivery. The evaluation provides the basis for further study of the Yoga4Health programme: evaluation outcome measures were sensitive to changes within this population and their use is recommended for future evaluation, in order to build a body of evidence regarding the programme. However, consideration needs to be given when collecting evaluation data from user groups who may have low English literacy. Future research should also investigate comparisons between the Yoga4Health programme and usual care, incorporate objective outcome measures, and examine cost effectiveness in more detail.

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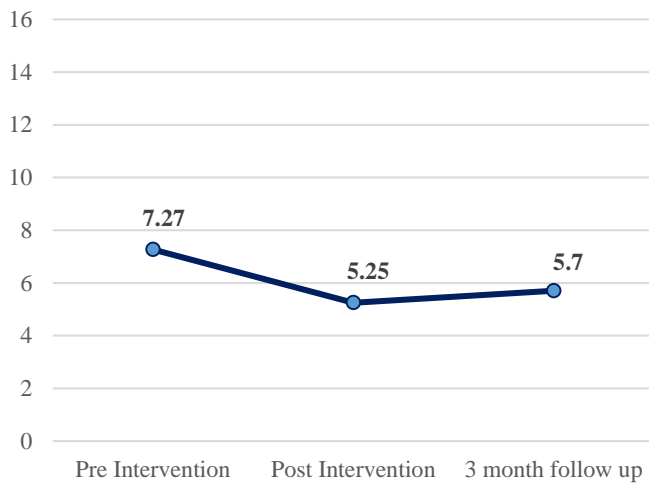
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Appendix A: Characteristics of service users (N=17).

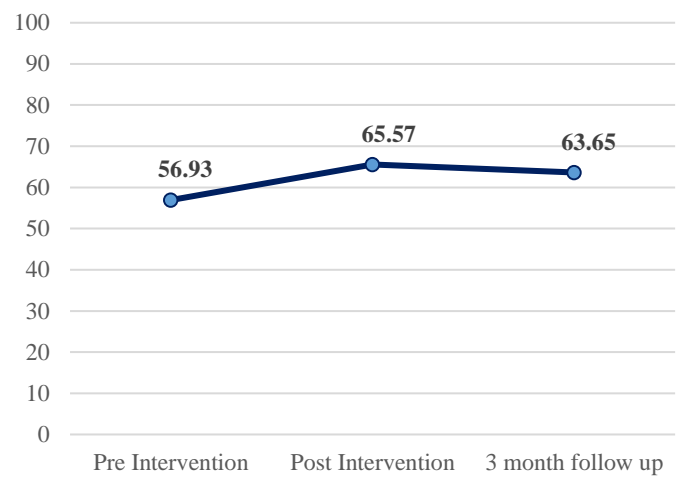
ID	Method	Gender	Age	Highest education level	Ethnicity	Marital status
P1	Interview	F	63	Degree/post-graduate	White	Single (never married)
P2	Interview	F	82	Technical/vocational qualification	White	Married/domestic partnership
P3	Interview	F	71	GCSE/O Levels	Black	Single (never married)
P4	Interview	F	70	Degree/post-graduate	Asian	Widowed
P5	Interview	F	69	Degree/post-graduate	White	Divorced
P6	Focus group 1	F	63	Degree/post-graduate	White	Single (never married)
P7	Focus group 1	F	57	Degree/post-graduate	Black	Single (never married)
P8	Focus group 1	F	65	A levels/college qualifications	White	Single (never married)
P9	Focus group 1	F	63	GCSEs/O-levels	White	Single (never married)
P10	Focus group 1	F	-	Degree/post-graduate	-	-
P11	Focus group 1	F	66	Technical/vocational qualification	Black	Married/domestic partnership
P12	Focus group 2	F	70	A levels/college qualifications	White	Widowed
P13	Focus group 2	F	71	Degree/post graduate	White	Married/domestic partnership
P14	Focus group 2	F	54	Degree/post graduate	White	Widowed
P15	Focus group 3	F	28	Degree/Post-graduate	Arabic	Married/domestic partnership
P16	Focus group 3	F	51	Other e.g. technical/vocational	Asian	Married/domestic partnership
P17	Focus group 3	F	57	Degree/Post-graduate	White	Single (never married)
P18	Focus group 3	F	65	Degree/Post-graduate	White	Divorced
P19	Focus group 3	F	56	A Levels/college qualifications	Iranian	Separated
P20	Focus group 3	F	53	'None of the above'	White	Divorced
P21	Focus group 3	F	40	'None of the above'	-	Married/domestic partnership
P22	Focus group 3	F	38	-	-	-

Appendix B: Graphs showing significant changes in outcomes variables.

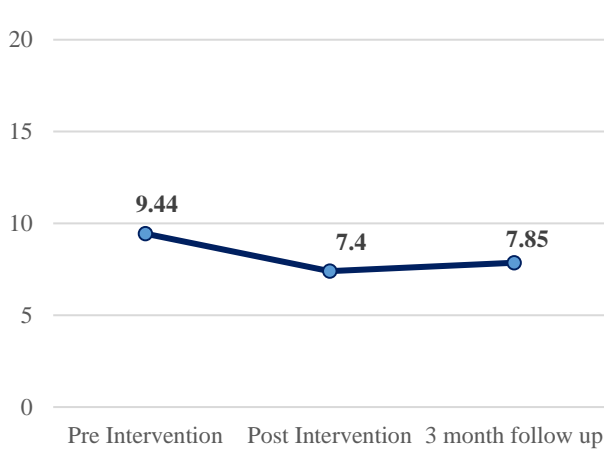
Perceived Stress



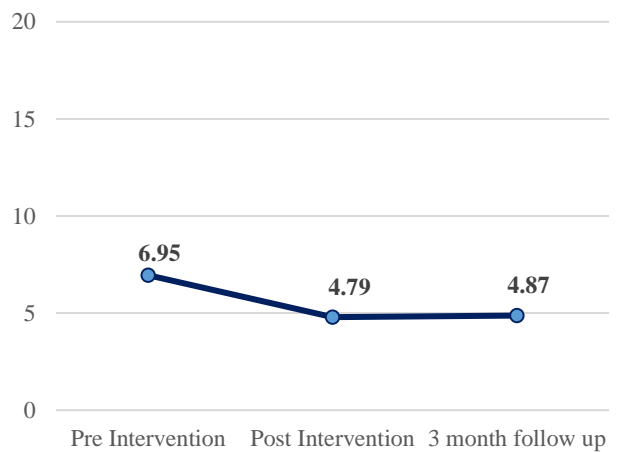
Patient Activation



Anxiety



Depression



Social Isolation / Connectedness

