

Research Article

Perceptions of Yoga among Older Adults: A Qualitative Approach

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Abstract

A very low percentage of older adults in Scotland meet the muscle strengthening, balance and co-ordination guidelines. Practicing yoga has benefits for older adults including improved strength, flexibility, mobility and balance. To develop an appropriate yoga programme for older adults, it is important to get an in-depth understanding of their perceptions of yoga. We conducted focus group discussions and interviews with a total of 19 male and female older adult participants, both with and without prior yoga experience. Thematic and framework analysis were used to analyze the transcripts, and explore the differences in perceptions between the yoga and non-yoga participants. The study offers insights into how older adults perceive yoga including knowledge of yoga, thoughts on the features and perceived intensity of yoga practice, the gendered nature of participation, benefits, and apprehensions. Guidelines for instructors while working with older adults include being audible, giving clear instructions and demonstrating in class. Creating a non-threatening environment, being aware of the level of the class, and offering alternative postures are other suggestions to aid the effective delivery of a yoga class. Strategies such as providing more information on yoga and its benefits, and organizing taster sessions or introductory classes were suggested to promote yoga in this population. These findings would be useful to persons interested in yoga for an older population, and should be considered while developing a yoga programme.

Keywords: Physical activity; Focus groups; Interviews; Muscle strengthening; Balance

Abbreviations

PA: Physical Activity; UK: United Kingdom; YP: Yoga Participants; NYP: Non-Yoga Participants; IPAQ-SF: International Physical Activity Questionnaire-Short Form; COREQ: Consolidated Criteria for Reporting Qualitative research

Introduction

In 2016, older adults (65+ years) comprised 8.4% of the world population [1]. This is projected to increase to 11.6% by 2030 [2]. In Scotland, older adults comprise 18% of the population, and the projected growth-rate for the 65-74 years and 75+ years age groups are 37% and 86% respectively by 2037 [3]. There is strong evidence to show that participating in Physical Activity (PA) is associated with numerous physical and psychological benefits for older adults [4-9]. In the United Kingdom (UK), PA guidelines for this age group include the accumulation at of least 150 minutes of moderate intensity activity or 75 minutes of vigorous activity per week, as well as activities to improve muscle strength, and balance and coordination on at least two days a week [10]. Recent data from Scotland suggests that 53% of men and 66% of women aged over 65 years did not meet the moderate to vigorous intensity recommendations [11]. Moreover, only 19% of older men and 12% of older women met the balance and co-ordination guidelines [12]. The percentage of the Scottish population meeting muscle strengthening guidelines decreased with age, with only nine percent of men and four percent of women over

75 years meeting the guidelines [12]. It is therefore important to develop and implement strategies to increase participation in these activities for this population.

Yoga has been suggested by the UK government to help older adults achieve the muscle strengthening guidelines [13]. In older adults, yoga has been found to improve physical and mental health status [14], including flexibility [15-17], strength [15,16,18], and balance and mobility [18-20]. Yoga has also been found to significantly reduce depressive symptoms, improve sleep quality [21] and enhance executive function [22]. Despite these benefits, only 2% of the Scottish population aged 65-74 years, and 0% of the 75+ age group participated in yoga or pilates in 2014 [23]. Women are more likely to participate in yoga than men [24], and male participation rates in yoga or pilates are extremely low in Scotland [23].

Formative evaluation is a crucial aspect of programme development and evaluation, and involves consultation with stakeholders and the target population to identify elements that are likely to be effective in the programme [25]. Two studies provide information on yoga practice while working with older adults. One study used a validated survey to understand the benefits, barriers and cues to participating in a yoga programme among older adults [26]. Another study drew upon the author's experience as a yoga teacher and researcher to provide guidelines to promote psychological health in older adults [27]. However, the lack of qualitative studies providing deep and rich information on older adults' views of yoga is evident.

This study seeks to address this knowledge gap by using qualitative techniques to understand the perceptions of yoga among males and females over 65 years, from a mixed sample of participants with and without prior yoga experience. The aim of this study is to:

1. Explore the perceptions of yoga in adults over 65 years
2. Understand why yoga is a female dominated activity
3. Provide guidance for yoga instructors
4. Provide strategies for promoting yoga in the older adult population

Methods

Participants

Male and female participants from Edinburgh, Scotland were recruited through convenience sampling, including those with previous yoga experience or currently practicing yoga (Yoga Participants, YP), and those who had not done yoga in the past five years (Non-Yoga Participants, NYP). The study inclusion criteria were that the participants should be 65 years and above, and should be able to speak and understand English. For the YP group, the number of years of yoga practice was not a criterion for recruitment. Participants with yoga experience were recruited from yoga classes at a local leisure centre, and a university fitness facility. Participants for the NYP group were recruited through programmes for older adults run by a local leisure centre. The lead author made announcements regarding the study at these venues, and approximately 30 people expressed an interest in participating. Interested participants were given a study information sheet describing the study objectives and what participation in the study would entail, and any questions raised were answered. Approximately 37% dropped out due to unavailability on the suggested dates. All participants gave written informed consent, and ethical approval for the study was obtained from an institutional ethics committee.

Instrumentation and data collection

Focus group sessions were initially considered the appropriate method for collecting data, as interaction among participants would yield richer information [28]. The recruitment of non-yoga participants and men proved challenging. Hence, data collection procedures were amended, and a mix of focus groups and interviews were conducted with these participants. The data were collected between November 2016 and March 2017. The sessions were conducted at the venues where the yoga classes were held, and at the location where some leisure centre programme members had their regular meetings.

Similar but separate topic guides were developed by the primary researcher for the YP and NYP groups, and were reviewed by a panel consisting of the authors and 3 external members with diverse experience relating to yoga, physical activity research and health. The guides (Appendix 1, 2) were revised based on suggestions from the panel. The topic guide for the YP group had questions relating to overall experiences with yoga, and the benefits and challenges, whereas the NYP group topic guide enquired about the potential benefits and apprehensions with yoga. Pictures of a yoga class and a two-minute video of yoga stretches were shown during the session to stimulate discussion. All focus groups/interviews were moderated/

conducted by the lead author (DS), with a co-moderator present for the focus groups. The moderator and co-moderators were all female. At the time of the study, the primary researcher was pursuing a PhD. She has a Masters in Sport and Health Sciences, and has undertaken formal training in conducting qualitative research. She is also an experienced yoga teacher.

Before the session commenced, participants were requested to fill out a brief questionnaire to record age, gender and yoga experience. They also completed the short version of the International Physical Activity Questionnaire (IPAQ-SF) [29], which captured information on time spent walking and performing moderate and vigorous intensity activities. Participants were then categorized into low, moderate or high physical activity levels using the scoring protocol for the IPAQ-SF (Appendix 3). All sessions were audio recorded. Additional notes were taken during the sessions, and a brief discussion between moderator and co-moderator ensued after the focus group sessions.

Data analysis

Thematic analysis [30] was used to analyze the transcripts, following the suggested step-by-step process. The first step was familiarization with the data. The focus group and interview recordings were transcribed verbatim either by the lead author or an external professional transcription company. Transcripts were read through several times. For step two, three researchers (DS, CF, GB) conducted line-by-line coding of one transcript. Initial codes were then generated by the primary researcher for all transcripts, and were transferred to a computer software package (Nvivo 11 for Windows). The third and fourth steps included searching for themes and refining them, and the software was used to manage the codes and thematic structure through this process. For the fifth phase, the essence of each theme was discussed by all authors to define and finalize these. Within some themes, framework analysis [31] was used to explore the differences in perceptions between the yoga and non-yoga participants. The software package was used to summarize data into a matrix that allowed for comparing the views of YP and NYP groups across themes and sub-themes.

The notion of rigor in qualitative research is evolving. Researchers have questioned the use of concepts like member checking or participant validation and inter-rater reliability to judge the accuracy and credibility of qualitative analysis [32]. In this study, rather than researchers independently coding data, and then coming to an agreement over the codes, they acted as critical friends [32], where dialogue and discussions guided the coding and analysis process. The COREQ checklist (Appendix 4) was adhered to while reporting on this study [33].

Results

Participant characteristics

A total of 19 participants attended the sessions (Table 1), and 3 focus groups and 5 interviews were conducted. It was difficult to recruit sufficient men to organize focus group discussions therefore interviews were conducted with male participants. The average age of the participants was 74 years (range: 65-84 years). Forty-two percent of the participants reported high physical activity levels, 32% reported moderate levels, and 21% reported low levels. The average duration of

Table 1: Number of study participants by gender, yoga experience and attendance at focus groups or interviews.

Yoga experience	Gender				Total
	Female		Male		
	Focus groups	Interviews	Focus groups	Interviews	
Yoga participants	9	0	0	2	11
Non-yoga participants	4	1	0	3	8
Total	14		5		19

the sessions was 55 minutes (standard deviation: 11).

Themes were identified and categorized under four broad topics (Figure 1 & Appendix 5): perceptions of yoga, gender, guidance for instructors, and strategies for promoting yoga.

Perceptions of yoga

General perceptions about yoga: Participants from both groups felt that yoga was an activity that was suitable for older people for a number of reasons. It was described as a good, all-round workout for an older person. As described in the following quote (female, YP), participants felt yoga was something that you could continue to do at their stage of life-

“..All of us probably did hockey or netball or something else. Obviously, at our age we don’t rush around playing netball or tennis as much. And yoga is something that you can do.”

They felt that yoga was inclusive, not too strenuous, and unlike many other activities, did not need much preparation.

Participants with yoga experience perceived it as a body and mind activity that brought breathing and movement together. They were aware of the different types of yoga, and its physical, mental, relaxation and spiritual dimensions. They had a very positive view of yoga, and expressed that they enjoyed and loved doing yoga. Another perception that came through strongly was the non-competitive aspect of yoga. The YP group described yoga as a journey where you don’t force yourself, and do it to your own ability. One participant (male, YP) reflected-

“The great thing about yoga is that each person goes to what the teacher calls your edge. You should go to your edge and not beyond it. Different people have different edges for different postures.”

The yoga participants also felt that while you may feel embarrassed if you fall in other classes, this does not upset you in a yoga class.

Some participants in the YP group described yoga as a different form of exercise, in that it is not a regimented activity, and works on the body differently from other exercises. One male participant felt that after a yoga class you feel you’ve exercised to the same degree as marching, and have exercised all your muscles.

Among the NYP group, many participants said that they did not know a lot about yoga, and were unsure about the different styles. A few were aware of yoga as it had been advertised in libraries and churches. One participant (male, NYP) was knowledgeable about the concept of yoga-

“So for me yoga has been how you combine physical positions with

a beneficial way of meditating and thinking about the deeper matters of life.”

Both groups viewed yoga as an activity that’s not too vigorous, and slower and easier compared to other activities. However, some non-yoga participants perceived yoga as something one does on the floor, to do with sitting and not associated with movement.

Benefits of yoga: Participants who had done yoga felt that it was beneficial on many levels as evidenced by this quote (female, YP)-

“I think it brings three benefits to me...it’s the physical fitness postures which stretch you and keep you flexible, maybe not as flexible as we used to be but at least it stops you getting worse, and secondly, it’s a sort of emotional balance and harmony,...relaxation is great, and the third part...that’s the meditation and the concentration on the inner self, which is interesting.”

The yoga participants described the benefits of yoga in detail:

Physical benefits: The YP group felt that yoga helped keep fit and improved flexibility, suppleness, strength and balance. They also felt that yoga helped with other sports and activities like badminton. Good posture was seen as a major benefit. Participants also expressed that yoga helped with joint and back problems, to ease pain, and aided recovery from any problems one might have. One participant felt that yoga helped her prepare, and recover from hip replacement surgery, and felt it gave her the confidence to do things post-surgery.

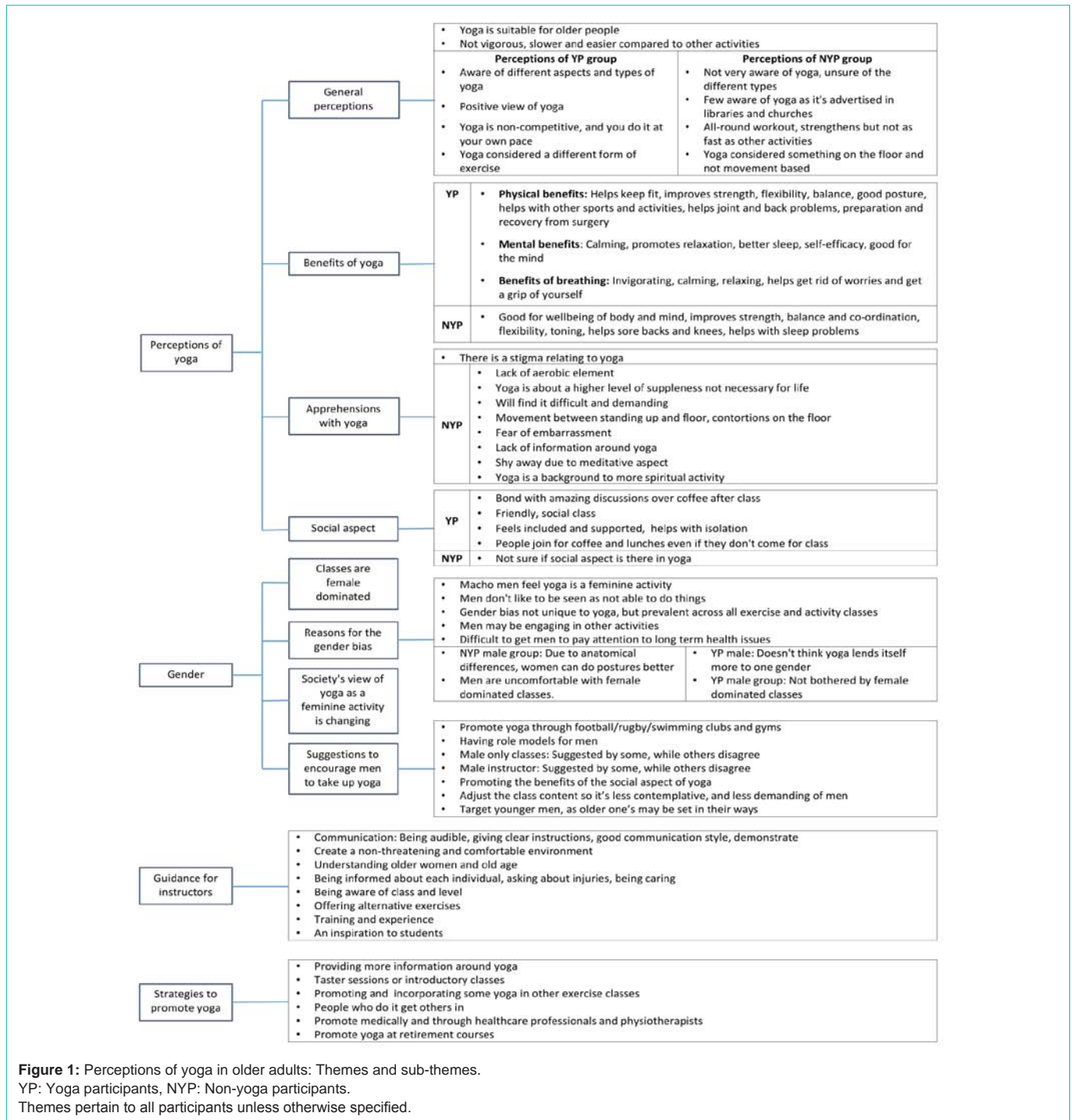
Mental benefits: Yoga was thought of as calming and peaceful by yoga participants. They felt that it relaxed them, and enabled them to sleep better. Yoga was found to be good for the mind, stimulated thought, and taught concentration. These older adults felt that yoga improved their self-efficacy and participants felt that they were learning, getting better with some postures, and were surprised when they found they could do some of the yoga poses.

Benefits of breathing: Many yoga participants liked the meditative and spiritual aspects of yoga, as well as the breathing. They found that breathing was invigorating and relaxing. It had a calming effect and helped get rid of worries. It helped get a grip of oneself, and hence could be used during a visit to the dentist, or while getting an injection.

The NYP group named some but not all of the above benefits of yoga. They felt that yoga was good for the body and mind, and could help with sleep difficulties, and sore backs and knees. Improved strength, balance, coordination, flexibility and toning were also mentioned as perceived benefits by the NYP group.

Apprehensions: The non-yoga participants expressed many apprehensions with regard to taking up yoga. Male participants felt that yoga was not aerobic enough, circulation and muscles would not be challenged, and that no sweating would occur. Yoga, they felt was about a higher level of suppleness not really necessary for everyday life.

The non-yoga group also anticipated that they would struggle with yoga, they would find it difficult and demanding, and wouldn’t be able to do many of the exercises. Holding a posture, which might lead to cramps, and balance exercises were regarded as particularly challenging. Some perceived yoga as contortions and difficult



positions as expressed by a female, non-yoga participant-

“I think if the word yoga was in it, I wouldn't be interested because you have a different perception of yoga...because all I've ever seen about yoga or known about yoga is difficult positions on the floor.”

Some non-yoga participants felt that they would be embarrassed in class if they couldn't do the things asked of them. They were also worried about getting down and up from the floor during a class.

Lack of information about yoga was a huge barrier to participation.

One non-yoga participant felt that people don't intuitively know what to expect with yoga, in contrast with swimming or walking. Moreover, it was not clear what types of yoga would be suitable for older people.

Participants from both groups indicated that there might be a stigma around yoga. Yoga could have religious connotations, projecting an image of someone sitting cross-legged. Phrases like “airy-fairyness”, “for the flower power people” or “for the third age” were used to describe the impression some people may have of yoga. Non-yoga participants viewed yoga as a background to spiritual

activity, and shied away as they thought it would have considerable meditation and spiritual content.

Social aspect: The yoga participants stressed the value and importance of social interaction. They felt that the yoga class was friendly and social, and they immensely enjoyed the discussions over coffee after classes. They also reported that some people who gave up the class still joined for coffee and lunches. The social bonding helped them feel included and supported. The participants in the two focus group sessions knew each other very well as they had been doing yoga together for a long time. The friendship and affection between them was evident. This quote (female, YP) shows that the effects and benefits of yoga go beyond the studio to make a deep and lasting impact-

“All of us have had things that have happened, life-changing things, like ten years ago I had my breast cancer and I was off yoga and all the other classes for a year. And the yoga teacher sent me some sheets, printouts of exercises, mostly breathing exercises, and that sort of thing, and that was lovely because I did them and I felt still included in the group, and others have perhaps lost husbands or illnesses and things, and we all have supported each other through that. Phone calls and letters...”

However, the non-yoga participants thought that the social aspect may be missing with yoga. Unlike walking where you interact during the activity, yoga was perceived as an individual activity like swimming.

Gender

The yoga participants observed a preponderance of women in yoga classes. Reasons for this gender bias were discussed by all participants, and an emerging critical factor was that it may be considered a feminine activity. Both groups expressed the view that older men still had a macho man attitude and regarded yoga as a “cissy” activity. Men may also be more self-conscious and don’t want to be seen as unable to do something. Some men suggested that yoga was more suitable for women as they have a degree of suppleness that men don’t have. One male yoga participant disagreed with this view. While some men found it uncomfortable to attend classes dominated by women, the two male yoga participants did not seem bothered by this. Although one of them admitted that before he started yoga, he had a perception that it was something that women did.

Another idea discussed was that the gender bias was not unique to yoga, but was prevalent across all exercise and activity classes. One reason offered was that men did not like to join groups and preferred individual activities, while women were more social. Finally, the difficulty of getting men to pay attention to long-term health issues was discussed.

Participants observed that society’s view of yoga as a feminine activity was changing, with football and rugby clubs introducing yoga, and young male students joining yoga classes. They offered some suggestions that would encourage men to take up yoga: promoting and delivering yoga through gyms, rugby, football and swimming clubs, and having role models could make yoga more appealing to men. Conducting male only classes and having a male instructor was advocated by some, and dismissed by others. One male non-yoga participant suggested that men need a soft entry to yoga, so that they

enjoyed the activity, built a social circle and felt the benefits of the social aspect of yoga. Finally, targeting younger men was suggested as older men may be too set in their ways, and it may be difficult to persuade them to join.

Guidance for instructors

Participants highlighted several qualities they would like in an instructor. They also offered suggestions on teaching methods that would facilitate the effective delivery of a yoga class.

The communication style adopted by instructors during a yoga class emerged as a significant theme. It was extremely important to participants that the teacher was audible, and they expressed frustration when the teacher spoke quietly. They wanted instructors to give clear and precise instructions, and provide explicit directions for each body part. They felt it was important for instructors to demonstrate, as they found that understanding movements on different sides of the body was confusing if no visual demonstration was provided. They also found it difficult to watch the instructor and do the postures at the same time, and hence felt that the instructor should first demonstrate and then they would follow.

In line with yoga being perceived as non-competitive, it was felt that the instructor should create a non-threatening and comfortable environment, where one is not forced to do anything. This is evident in the following excerpt from a focus group session (females, NYP)-

Participant 1: You have to be reminded that, that’s okay. If that’s as much as you can do, that’s okay.

Participant 2: To take the lower option.

Participant 1: And you don’t feel embarrassed and you don’t feel, well, I can’t keep up with them so I’m not going to go anymore.

Participant 3: Yes, you’ve got to do it at your own pace.

Participants stressed that an instructor should be sympathetic, patient, approachable and encouraging. They appreciated it when instructors were caring and took an interest in each individual, asking about injuries and health problems. Hence being aware of the class and their abilities was important to participants, who were put off if they were taxed beyond their capabilities. Participants emphasized the importance of offering alternative exercises while working with older people, using props like chairs or providing easier options. They valued training and experience in a teacher.

A male yoga participant said that he hurt himself in yoga on one occasion, which may have been caused by the instructor giving him a push while in a yoga pose. Since instructors may not be aware of the physical condition of every student, it may be prudent for them to abstain from manually correcting the postures, and instead provide verbal feedback.

Strategies for promoting yoga

Participants from both groups suggested some strategies to overcome apprehensions and promote participation in yoga.

Providing more information around yoga and publicizing the benefits would assuage some of the fears of non-yoga participants, who felt they maybe more motivated to join if they understood the benefits. Non-yoga participants were keen on yoga tasters and

introductory sessions, so that they could try and see if it was for them. Introducing a bit of yoga in other exercise classes was another strategy suggested. It was recognized that people who do yoga had a big role to play in encouraging partners and friends to join. Although this has not always been successful, many in the yoga group were themselves brought in by people they knew, and hence experienced a degree of comfort while joining.

Participants felt that yoga could be promoted more by healthcare professionals and physiotherapists to address medical issues. The following quote (female, YP) elaborates the premise and reason behind this suggestion.

“I also think medically they could promote it some more. Because I have arthritis, basal arthritis. Now, they wanted to immediately give me injections, and with an operation in two years’ time. And I said no, I want you to give me a series of exercises. Which they have done. And I went back last week, and she said the injections are really working. I said I haven’t had the injections. She never suggested exercises. And I think medically, they could suggest. That’s the first, try it, and if it doesn’t work then move on to the next.”

Finally, promoting yoga during retirement courses using videos and demonstrations was suggested.

Discussion

The study offers an in-depth understanding of how yoga is perceived among older adults with and without yoga experience. A key finding was that yoga was viewed as a suitable activity for older adults by all participants, as it is slow, gentle and not strenuous, and could be practiced as they aged.

The YP group reported that practicing yoga had many physical and mental benefits, and some of these were also perceived by the NYP group. Perceived benefits like improved strength, balance, posture, sleep, mental ability, relaxation, help with joint problems, and social benefits have been reported by another study [26]. The study also reported benefits like lowered blood pressure, immune response and preventing chronic fatigue which were not mentioned by the participants in the current study. This could be due to the differences in data collection methods, as the other study administered a validated survey. Intervention studies confirm that yoga is effective in improving some of these mentioned parameters like strength, balance, flexibility, pain management and sleep [15-21]. Participants in the current study mainly mentioned observable benefits that improve day-to-day living and quality of life. They did not seem aware of yoga’s beneficial effects in improving medical conditions such as diabetes [34], and cardiovascular risk factors [35].

Feeling intimidated has been identified as a barrier to physical activity participation in older adults [23,36]. This is an issue that yoga could transcend as the YP group stressed on its non-competitive aspects, and stated that they don’t feel embarrassed during a yoga session. However, results indicate that the non-yoga participants viewed yoga as difficult contortions on the floor, and felt they may be embarrassed if they couldn’t do some of the postures in class. This perception could be altered by providing more information on yoga as an activity that is suitable for people of all fitness levels and capabilities. Quotes from yoga participants emphasizing the non-

competitive and non-judgmental aspects of yoga could be used in promotional material. This could also be addressed by instructors who could offer alternative exercises and props, and ensure that the pace and intensity of the class is suitable for a range of abilities. Since non-yoga participants were apprehensive about the meditation and spiritual aspects, careful consideration should be given to the inclusion and presentation of these elements during intervention development and promotion. It would also help to increase awareness of the benefits of breathing and meditation.

In the current study, it was noted that some gender issues may not be specific to yoga, and may actually relate to the attitudes that older men have towards long-term health issues and joining group activity classes. Although some participants were of the opinion that older men were set in their ways, some ideas to overcome gender issues were suggested.

Instructor quality has been previously reported as a perceived barrier to yoga participation [26], and the current study is able to offer guidance for instructors to consider while working with older adults. Some identified themes pertaining to instructor qualities are validated in a study [27] providing guidelines to promote psychological health in older adults. Similar to current findings, the study [27] suggested that instructors use positive and encouraging words, and provide chairs to students who need support. It also encourages verbal rather than physical correction. With respect to demonstrating, the study suggested that instructors mirror their students to avoid confusion about movement on left and right sides.

Implications for practice and future research

Although research evidence suggests that yoga has the potential to improve health outcomes in older adults, studies with larger sample sizes and rigorous reporting are required to establish the effectiveness of yoga, as well as the optimal intensity and frequency of yoga practice [14,19]. The findings of this study can aid future research by informing intervention development. Men in the NYP group felt that yoga would not be challenging aerobically, and this theme was also reported by another study [26]. In this context, it is important to educate them about strength and balance guidelines, as well as yoga’s effectiveness in improving these outcomes. This study forms a part of the body of research aiming to increase adherence to muscle strengthening, and balance and coordination guidelines in older adults. Systematic reviews and meta-analysis to establish the evidence base and understand contraindications of yoga for this age group would also facilitate this endeavor. Another benefit mentioned by yoga participants is that yoga is instrumental in preparing and recovering from surgery. While there is some research evidence to show that yoga has scope as a rehabilitative tool [37,38], more research evidence is required for yoga to be actively promoted by healthcare professionals and physiotherapists.

Strategies to overcome barriers and encourage yoga participation have been compiled. The study thus serves as a practical guide to yoga instructors, other teachers working with older adults, researchers and programme developers.

Strengths and limitations

This is the first study to use qualitative techniques to understand the perceptions of yoga in older adults, and as a result offers new

and nuanced findings. One of the study's strengths is that it captures and provides analyses of the views of older adults with no prior yoga experience, to identify barriers to participation. Another is that the study makes practical recommendations which have implications for research and practice. The study has some limitations. The sample size may not be representative in terms of socio-economic, geographical and physical activity characteristics of older adults in Scotland. As it proved difficult to recruit men and non-yoga participants, they form a smaller proportion of the overall sample. Persons averse to yoga may not have been interested in participating in the study, and hence their views may not be adequately represented. Due to time and resource constraints, we could not ensure that data saturation was achieved.

Conclusion

Yoga was viewed as a slow, gentle activity, suitable for older adults. Yoga participants had a positive view of yoga and appreciated its non-competitive aspect. However, some participants with no yoga experience anticipated they may find it too demanding, and perceived it as contortions on the floor. The gender bias was ascribed to male attitudes like characterization of yoga as a feminine activity, preference for individual rather than group activities, and lack of attention to long-term health issues. Guidelines for yoga instructors working with older adults include being audible, giving clear instructions and demonstrating in class, creating a non-threatening environment, being aware of the level of the class, offering alternative postures, and using props when required. Providing more information on yoga and its benefits, and organizing taster sessions were suggested strategies to overcome barriers and promote yoga in the older adult population. These insights and strategies would be helpful to researchers, instructors, yoga studios, fitness centers, and programme developers, and should be considered while designing a yoga programme.

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References

- World Bank Group. Population ages 65 and above (% of total).
- Pew Research Center. Global Population Estimates by Age, 1950-2050.
- National records of Scotland. Scotland's Population. The Registrar General's Annual Review of Demographic Trends 2014. 2015.
- Vogel T, Brechat Ph, Leprêtre Pm, Kaltenbach G, Berthel M, Lonsdorfer J. Health benefits of physical activity in older patients: a review. *Int J Clin Pract*. 2009; 303-320.
- de Labra C, Guimaraes-Pinheiro C, Maseda A, Lorenzo T, Millán-Calenti JC. Effects of physical exercise interventions in frail older adults: a systematic review of randomized controlled trials. *BMC geriatrics*. 2015; 15: 154.
- Taylor A, Cable N, Faulkner G, Hillsdon M, Narici M, Van Der Bij A. Physical activity and older adults: a review of health benefits and the effectiveness of interventions. *Journal of sports sciences*. 2004; 22: 703-725.
- Hamer M, Chida Y. Physical activity and risk of neurodegenerative disease: a systematic review of prospective evidence. *Psychological Medicine*. 2009; 39: 3-11.
- Windle G, Hughes D, Linck P, Russell I, Woods B. Is exercise effective in promoting mental well-being in older age? A systematic review. *Aging & Mental Health*. 2010; 14: 652-669.
- Paterson DH, Warburton DER. Physical activity and functional limitations in older adults: a systematic review related to Canada's Physical Activity Guidelines. *The international journal of behavioral nutrition and physical activity*. 2010; 7: 38.
- Department of Health. Start Active, Stay Active. A report on physical activity for health from the four home countries' Chief Medical Officers. 2011.
- Strain T, Fitzsimons C, Foster C, Mutrie N, Townsend N, Kelly P. Age-related comparisons by sex in the domains of aerobic physical activity for adults in Scotland. *Preventive Medicine Reports*. 2016; 3: 90-97.
- Strain T, Fitzsimons C, Kelly P, Mutrie N. The forgotten guidelines: cross-sectional analysis of participation in muscle strengthening and balance & coordination activities by adults and older adults in Scotland. (Report). *BMC Public Health*. 2016; 16.
- Department of Health. Physical activity benefits info graphic for adults and older people. 2016.
- Patel NK, Newstead AH, Ferrer RL. The effects of yoga on physical functioning and health related quality of life in older adults: a systematic review and meta-analysis. *J Altern Complement Med*. 2012; 18: 902-917.
- Vogler J, O'Hara L, Gregg J, Burnell F. The impact of a short-term iyengar yoga program on the health and well-being of physically inactive older adults. *Int J Yoga Therap*. 2011; 61-72.
- Chen KM, Chen MH, Hong SM, Chao HC, Lin HS, Li CH. Physical fitness of older adults in senior activity centres after 24-week silver yoga exercises. *Journal of Clinical Nursing*. 2008; 17: 2634-2646.
- Chen KM, Fan JT, Wang HH, Wu SJ, Li CH, Lin HS. Silver yoga exercises improved physical fitness of transitional frail elders. *Nursing Research*. 2010; 59: 364-370.
- Tiedemann A, O'Rourke S, Sesto R, Sherrington C. A 12-week Iyengar yoga program improved balance and mobility in older community-dwelling people: a pilot randomized controlled trial. *J Gerontol A Biol Sci Med Sci*. 2013; 68: 1068-1075.
- Youkhana S, Dean CM, Wolff M, Sherrington C, Tiedemann A. Yoga-based exercise improves balance and mobility in people aged 60 and over: a systematic review and meta-analysis. *Age Ageing*. 2016; 45: 21-29.
- Nick N, Petramfar P, Ghodsbin F, Keshavarzi S, Jahanbin I. The Effect of Yoga on Balance and Fear of Falling in Older Adults. *PM and R*. 2016; 8: 145-151.
- Wang YY, Chang HY, Lin CY. Systematic review of yoga for depression and quality of sleep in the elderly. *Journal of Nursing*. 2014; 61: 85-92.
- Gothé NP, Kramer AF, McAuley E. The effects of an 8-week Hatha yoga intervention on executive function in older adults. *J Gerontol A Biol Sci Med Sci*. 2014; 69: 1109-1116.
- Gill V, Campbell-Jack D, Hinchliffe S, Bromley C. The Scottish Health Survey 2014: Main Report. Edinburgh: The Scottish Government. 2015.
- Ding D, Stamatakis E. Yoga practice in England 1997-2008: Prevalence, temporal trends, and correlates of participation. *BMC Research Notes*. 2014; 7.
- Nutbeam D, Bauman AE. Evaluation in a nutshell: a practical guide to the evaluation of health promotion programs. NSW: McGraw Hill Education, Medical. 2014.
- Nayak HD, Patel NK, Wood R, Dufault V, Guidotti N. A study to identify the benefits, barriers, and cues to participating in a yoga program among community dwelling older adults. *Journal of yoga & physical therapy*. 2015.
- Bonura KB. The psychological benefits of yoga practice for older adults: evidence and guidelines. *Int J Yoga Therap*. 2011; 129-142.
- Barbour RS. Doing focus groups. Los Angeles; London: Sage. 2007.
- Booth ML, Ainsworth BE, Pratt M, Ekelund U, Yngve A, Sallis JF, et al. International physical activity questionnaire: 12-country reliability and validity. *Med sci sports Exerc*. 2003; 195: 3508-1381.

30. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006; 3: 77-101.
31. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC medical research methodology*. 2013; 13: 117.
32. Smith B, McGannon KR. Developing rigor in qualitative research: problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*. 2017: 1-21.
33. Tong A, Sainsbury P, Craig J. Consolidated Criteria for Reporting Qualitative Research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007; 19: 349-357.
34. Kyizom T, Singh S, Singh KP, Tandon OP, Kumar R. Effect of pranayama & yoga-asana on cognitive brain functions in type 2 diabetes-P3 Event Related Evoked Potential (ERP). *The Indian journal of medical research*. 2010; 131: 636-640.
35. Cramer H, Lauche R, Haller H, Steckhan N, Michalsen A, Dobos G. Effects of yoga on cardiovascular disease risk factors: a systematic review and meta-analysis. *International journal of cardiology*. 2014; 173: 170-183.
36. Costello E, Kafchinski M, Vrazel J, Sullivan P. Motivators, barriers, and beliefs regarding physical activity in an older adult population. *J Geriatr Phys Ther*. 2011; 34: 138-147.
37. Sharma M. Yoga as an Alternative and Complementary Approach for Arthritis. *J Evid Based Complementary Altern Med*. 2014; 19: 51-58.
38. Telles S, Kozasa E, Bernardi L, Cohen M. Yoga and Rehabilitation: Physical, Psychological, and Social. *Evid Based Complement Alternat Med*. 2013.