

Exploring Motivational Interviewing as a Technique for Physical Activity Promotion on an Acute Medical Unit Setting – A Qualitative Study

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Abstract

Research Question: *Could the self-perceived physical activity levels of acute in-patients be improved by offering motivational interviews prior to discharge from the Acute Medical Unit: A Qualitative Study.*

Aims: *To explore how the patients on an acute medical unit perceive Motivational Interviewing (MI) as a method of encouraging physical activity (PA) for them, in relation to any change in their perceived involvement in PA after 6-8 weeks and to explore patients' feedback of motivational interview and their preferences as to its technique and manner of delivery to them.*

Methods: *Participants were recruited from an acute medical admissions unit. Eligibility criteria was patients' ability to walk 10m on the flat ground, with or without an aid and identified as being close to discharge by ward staff. Participants answered the Global Physical activity Questionnaire (GPAQ), following which they were offered MI by their bed side. 6-8weeks later, participants answered the same questionnaire and participated in a semi-structured interview, which was verbatim transcribed and analysed using an inductive thematic analysis. Ethical approval was gained from the London - Brighton & Sussex Research Ethics Committee and Local Human Research Authority (REC reference 18/LO/0496).*

Results: *7 out of 10 participants found MI, helpful at improving their participation in PA. Although certain barriers were identified that limited PA participation such as perceived fears, concerns and misconceptions of PA, where participants expressed preference for these barriers to be tackled individually in conjunction with motivational interview techniques.*

Conclusions: *MI is a feasible method of encouraging PA, which could be impactful on the PA participation of the patients on an AMU. Future studies may consider combining approaches towards tackling perceived barriers in conjunction with MI when delivering this intervention to the patients in this setting.*

Keywords: Motivation, Physical activity, Interest, Engagement, Motives, Preferences

Introduction

In 2009, 60%-70% of the UK adult population were reportedly physically inactive [1]. Between 2012 and 2014, only an estimated 60% of adults (16-64 years) and 47% of older adults (65-74 years) in England, were reportedly meeting the government recommendations for PA [2,3]. Despite the undeniable health benefits of regular Physical activity (PA) and the global strategies by the World Health Organisation (WHO) to suppress the prevalence of physical inactivity (PI), many adults remain inactive [4].

Physical inactivity (PI) is the fourth leading risk factor for global mortality responsible for an estimated 3.2million deaths annually [4-6]. PI currently accounts for 6-10% of non-communicable diseases

globally [4-6]. The estimated financial repercussion of PI on the UK healthcare system weighs up to £1.2 billion spent annually on treating diseases that could be prevented or remedied by regular PA [7]. Over 20 million adults (39%) in the UK do not currently meet the government recommendations for PA, with figures suggesting 8.3 million inactive males and 11.3 million inactive females [7]. The British Heart Foundation (BHF) survey, reveals that 60% of adults do not know about the current government guidelines for PA [7].

Motivational Interviewing (MI) is a helpful way to encourage behaviour change, through guiding and eliciting a person's intrinsic desire for change [8]. In healthcare, it is described as a skilful clinical style that entails evoking a patient's innate desire towards implementing change [8]. MI is built on the platform that eliciting motivation for change from patient, should be 'patient centred' where the role of the practitioner is to guide the patient through this process [8]. The delivery of MI is guided by the MI Styles, Spirits,

Principles and Stages [8]. Previous studies illustrate that MI has been offered to address several health conditions in various settings, but only a few have focused on offering MI to patients during hospital admission [9,10].

Regular PA currently prevents greater than 25 chronic health conditions and premature death [11,12,13]. Based on the hypothesis that the period of time spent in the hospital could be a ‘teachable moment’ where patients are most concerned about their health, a qualitative study was conducted on an acute medical unit (AMU), to explore the perceptions of patients on receiving physical activity advice (PAA) during their period of admission. Based on the views of 11 participants, PA was a topic they were willing to discuss if it related to their reason for hospitalization. Though most of the participants appreciated that PA was important, only a few understood its health benefits and majority did not know about the government recommendations for PA [3]. This follow-on study aims to determine whether individually tailored PAA in the form of motivational interviewing delivered to patients prior to discharge from the AMU might be effective in increasing their self-perceived PAL’s as well as patient feedback on motivational interview for this purpose.

Research Question

Could the self-perceived physical activity levels of acute in-patients be improved by offering motivational interviews prior to discharge from the acute medical unit?

Aims

1. To explore patients’ perceptions of the MI approach in offering PA advice to them and their perceived PAL’s over a period of 6-8weeks.
2. To explore patients’ feedback of MI and their preferences as to its technique and manner of delivery to them.

Worldview

This study was conducted based on a social pragmatist worldview, to establish a better understanding of patients views of MI in relation to their perceived PAL’s [14]. The pragmatic paradigm, pictures what the research problem is, why it is a problem and how best to resolve it [15]. This worldview better responds to the research question of if MI could be effective at improving the perceived PAL’s of patients on an AMU, as it shapes its approach towards research with the belief of utilizing every avenue towards resolving a research problem [15]. This epistemology allows exploration of a research problem through a combination of approaches and is therefore non-limited to a single philosophical perspective [15].

Methods

Study Design

Qualitative: A qualitative approach would explore deeply, patients’ views and why they nurse these views. This is important to establish how to improve the quality of care offered to patients within this setting in the future. Understanding the diversity in opinions and interpreting the voiced perceptions of participants would not be compatible with a quantitative study design, therefore this study has been addressed from a qualitative point of view.

Semi-structured Interviews entailed open-ended questions that enabled participants to lead the discussion in a direction that mattered to them [16]. Interview questions were designed in a manner

that permitted an in-depth exploration of participants’ views and perspectives and follow-up on emerging topics based on participants’ responses [16]. All the interviews were tape recorded using an audio recording device (Olympus WS-852) and verbatim transcribed [17].

Triangulation

The concept of triangulation was adapted to better understand the research problem rather than using a single method alone. Considering the often ‘inevitable’ researcher bias, the concept of triangulation is instrumental for strengthening confirmability in qualitative research [18,19].

This study included a standardised questionnaire, Global physical activity Questionnaire (GPAQ) and a short study questionnaire. The GPAQ has been recommended by the World Health Organisation (WHO) for recording PAL and monitoring non-communicable diseases [5]. The purpose of the GPAQ questionnaire was to record the reported PAL’s of patients at baseline and at follow up 6-8weeks later, after having undergone MI, to descriptively analyse and compare both data. The study questionnaire consisted of 6 questions that were quantitative in nature, to guide the interview questions.

This study was not looking to draw out any statistically significant or quantitative conclusions, the mere purpose of the questionnaires was to further inform data generated from the semi-structured interviews and help assess whether MI was helpful to the specific individual participants in this study or not. However, it may be that the findings drawn out from this qualitative study could set grounds for future studies to follow this issue on assessing further using a quantitative approach.

Ethical Approval

Ethical approval was gained from the London - Brighton & Sussex Research Ethics Committee and Local Human Research Authority on the 26th April 2018 (REC reference 18/LO/0496).

Patient and Public Involvement

Three patients from ward B3, all non-participants of this study were involved in ensuring that wordings of the study documents including the consent form, participant information (CF), sheet (PIS), the study questionnaire and interview guide were clear and understandable.

Motivational Interview

Motivational interviews were offered to capitalise on the ‘teachable moment’ and maximise the benefits of patients’ visit to the hospital [20]. A single face-to-face MI session was used to offer brief tailored PAA to the patients on ward B3, the Queens Medical Centre (QMC) by their bedside. The bedside was chosen, so that staff could monitor and continue to provide treatment to the participant where necessary. The sessions were conducted by the researcher after having undertaken a certificate online course on MI, coupled with self-directed learning (>22 reading hours) [10]. The MI’s were offered in four stages through MI purely determined by each participant’s readiness to progress through each stage [8]. The sessions were guided by the principles and spirits of MI applied all through the stages and aimed at supporting and promoting positive talk about behaviour change and PA participation.

The MI sessions were centred towards resolving ambivalence meanwhile evoking ‘change talk’, using the MI techniques of exploring decisional balance, by patients sharing what they stood

to benefit from regular PA as compared to an inactive lifestyle [21]. Further to this, reflecting on a time that they were more active and its benefits and thinking forward towards drawing in more PA to their current lifestyle. Prior to each MI session, a common understanding of PA was established by explaining PA as described by the 'Start active, Stay active' initiative to each participant beforehand. During the session, participants were shared information about the current government guidelines for PA and the widely accepted health benefits of PA [3,4,22]. The questions asked during the sessions were open-ended in nature and aimed towards engaging the patients in sharing their thoughts and interests regarding PA. Participants were made aware of available local opportunities for PA, such as online maps, for finding routes for those interested in walking or cycling as their preferred form of PA [21]. Each MI session was offered while the patient was waiting to be discharged from the hospital and lasted for a period of 10-15 minutes. None of the participants reported to have previously received MI for delivering PAA to them prior to this study.

Sampling and Recruitment

A Purposive sampling strategy was used to recruit participants into this study. Participants who met the selection criteria were approached to participate. Out of 31 potential participants that were approached, 15 patients agreed to participate at the initial phase of this study, meanwhile reason for not participating was obtained (Table 1.0) from the non-participants who were approached. From fifteen participants who received MI's, ten participants participated in the semi-structured interview, which was conducted until data saturation had been reached by the tenth semi-structured interview [23].

Exclusion Criteria

Eligible patients on ward B3 were excluded if:

1. Unable to give an informed consent
2. Less than 18 years of age
3. Did not understand English
4. Were identified by ward staff to be unable to walk 10m on flat ground with or without walking aid.

Procedures and Data Collection

The Researcher was on the ward B3 six times weekly for a period of three weeks to recruit patients who had given consent. With consideration of the exclusion criteria, eligible participants were approached to participate at a time they were not being attended to. Initial communication to patients was by a ward staff, following which the researcher approached potential participants and explained the study configuration in detail to them. Patients had sufficient time to consent to participating, they were informed that their decision to partake in this study, was not going to affect any aspect of medical care that they were receiving at the hospital and that they could withdraw from the study at any time, without giving a reason as elaborated in the PIS. Interested participants were then offered the study documents and the consent form to give a formal written consent. Thereafter, participants were offered the GPAQ to answer. Following this, they took part in an individual face-to-face session of MI. The purpose of offering GPAQ, was to measure the participants usual PAL for the past one year before their admission to the hospital. It is important to record their baseline PAL to know if patients were previously inactive and to serve as a base for comparison after MI had been offered to them where any change in their PAL could be observed after 6-8 weeks [20,24]. During the sessions, the researcher sat on a chair the same level or slightly lower than the patients bed

level by their beside and wore informal clothing, in attempt to convey a sense of equality and enable participants to feel comfortable to share their thoughts [16].

After the MI session, participants were informed about a follow-up to be conducted 6-8 weeks later over a telephone call and were contacted two weeks prior to the scheduled follow-up period, to agree upon a suitable time for this session to hold. Both interviews were facilitated by the researcher because it was not practical for a different person to conduct either of the two interview sessions.

Follow-up

Participants answered two questionnaires following which they took part in a semi-structured interview which was tape recorded. The GPAQ, was first answered to record participants PAL's. The second questionnaire was a study questionnaire, specifically designed for this study and comprised of 'yes' or 'no' questions that asked about participants views of MI, its approach towards offering PAA to them and their current involvement in PA. The semi-structured interview consisted of open-ended questions that requested a further expansion on participants' answers to the study questionnaire questions and the interview was an overall feedback session for patients' experience of MI for encouraging PA [16]. Semi-structured interviews were conducted using a telephone in the chief investigators office and lasted for a duration of approximately 10-15 minutes, depending on how much each participant had to share. This location was chosen because it is a quiet room where the interviews could conveniently be conducted with less chances of interruptions. Tape recorded verbal consent was obtained from each participant prior to conducting each semi-structured interview [25]. The researcher did not know any of the participants before this study and participants were not offered any incentives to participate.

Transcription

Semi-structured interviews were verbatim transcribed by the researcher. Transcripts included word for word the participants' aired views in the manner that they had expressed them [26]. The researcher after each transcription, crosschecked transcripts with the corresponding tape recording to ensure accuracy [27].

Analysis

GPAQ Analysis

After initial cleaning of data according to the WHO guide, variables were summed in their minute equivalent and in Metabolic equivalent term (MET) minutes, using the WHO guide equation for calculating total PA MET-minutes per-week: $[(P2*P3*8)+(P5*P6*4)+(P8*P9*4)+(P11*P12*8)+(P14*P15*4)]$, where total MET-minutes per-week= The sum of MET-minutes of each PA domain. The total time spent on PA across all three domains were calculated for a week period. Participants who were meeting the PA guidelines of equal to or above 150 minutes per-week (600 MET minutes per-week), were classified as 'active' and participants who were not meeting the guideline recommendations were considered 'inactive' [3].

Qualitative Analysis

Thematic analysis was used to analyse all the interviews using a framework approach [27]. Pragmatism enables the use of a constructionist approach while analysing data, to better understand the manner at which participants give meaning to their experiences, including broader social-cultural factors and abstracts contributing to shape individual concepts [27]. After initial familiarisation with

the transcripts, topic lines were first identified at the semantic level. Upon deeper immersion into the data, themes were identified using latent level thematic analysis to observe significant patterns in participants' responses and understand their views through their lens [27]. An inductive approach was used, to identify themes where themes were strongly 'data driven' rather than from pre-existing ideas and concepts [14]. The main analytic aim was to identify, describe and elaborate on the voiced perceptions of the participants as to the issues discussed [27].

After initial analysis, identified themes, subthemes and their corresponding meanings were organised into a theme collection. The theme collection was reviewed by two supervisors. With each supervisor on different occasions, a random transcript was selected to be coded independently by the researcher and the supervisor. In both instances, majority of the identified themes were similar between the researcher and the supervisors. Cases where themes were not similar, resolution was done by discussion between the researcher and the supervisors. Upon discussion, where necessary, slight changes were made to the previously identified themes. Based on data extracts supporting a theme, three participants were randomly selected and contacted during the analysis, to ensure that the intended meaning imbedded in their wordings wasn't affected during the analysis process and was accurately represented in the explanation of the themes and subthemes [28].

Iterative Process

Semi-structured Interview guide

The semi-structured interview topic guide was slightly modified, due to emerging topic lines from conducting the first three interviews. Additional questions were included to enable an in-depth exploration of perceived limitations to participants PA participation (PAP). Participants' views were further explored on the approach towards MI delivery being modified to include techniques towards tackling barriers alongside MI techniques to encourage PA. This was added to enable an understanding of ways that could potentially strengthen the effects of MI on participants perceived PAL's in the future. An additional question was also included to find out if participants previously knew the health benefits of PA prior to their MI experience and if this knowledge helped to encourage their involvement in PA.

Changes to Follow-up arrangements

The timing for contacting participants for the follow-up session was changed from two weeks prior to their scheduled interview time to participants selecting their preferred time to be contacted to fix a follow-up appointment 6-8weeks later and they were contacted accordingly. Additionally, participants were contacted two weeks before and a few days leading to the arranged time for the follow-up session to hold. This change was made because the initial arrangement had less response from the participants.

Confidentiality and Anonymity

Hard copy of the study documents, including the consent forms and audio recording device, were securely stored in a locked cabinet in the chief investigator's office. Upon recruitment into the study, participants were allocated unique ID numbers with which they were addressed throughout the course of the study. Pseudonyms (non-identifiable code names) were allocated to participants, as further attempt towards ensuring anonymity and maintaining confidentiality [29,30].

Results

31 patients were initially approached, out of which 15 patients accepted to participate in this study. Table 1 illustrates the demographics of the 15 patients who participated in this study. The mean age of participants was 50years (range 22-76). The mean age of non-participants was 54years (range 24-88). 60% of participants were females of which 33% were below 55years. 62% of non-participants were females of which 72% were below 55years.

Out of the 15 participants who took part in the initial phase of the study, 5 participants who underwent MI and answered the baseline GPAQ questionnaire while at the hospital, did not partake in the follow-up phase of this study. Knowing that studies of this nature often have follow-up limitations, attempts were made before participants were declared loss to follow-up, to limit attrition bias [31]. Table 1 highlights all the patients who participated in the initial phase of this study and reasons for loss to follow-up. 80% of participants who were loss to follow-up were females.

Table 1: Participants who were offered MI

Participants/Pseudonyms	Gender	Age (Years)	Ethnicity	Loss to follow-up and reason
Participant 1/(XY)	Female	55	Indian	>3 voicemails with no response
Participant 2/(XZ)	Female	23	Maltese	-
Participant 3/(OP)	Male	55	Jamaican	-
Participant 4/(QR)	Male	40	English	-
Participant 5/(ST)	Female	52	English	Gave inaccurate contact information and so could not be reached
Participant 6/(UV)	Male	45	English	>3 phone calls + emails with no response
Participant 7/(WX)	Male	63	English	-
Participant 8/(YZ)	Male	24	English	-
Participant 9/(QX)	Female	60	Jamaican	-
Participant 10/(PQ)	Female	59	English	voluntarily withdrew from study
Participant 11/(RS)	Female	76	English	-
Participant 12/(XV)	Female	70	Scottish	-
Participant 13/(ZX)	Male	42	English	-
Participant 14/(YU)	Female	61	English	-
Participant 15/(QZ)	Female	22	English	>3 phone calls without response

Quantitative Results

All 15 participants answered the GPAQ at the initial stage, but only 10 participants completed the follow-up GPAQ and study Questionnaires as illustrated in Table 2 and Table 3 respectively.

In the study questionnaire, 7 participants out of 10 felt that MI helped to encourage PA participation for them. 8/10 felt they were more motivated to engage in PA. 7/10 expressed that they encountered difficulties when engaging in PA. 7/10 are pleased with the amount of PA they engaged in after MI. 7/10 participants are willing to undertake more PA.

Cases where implausible values were entered in a PA domain, were excluded from data analysis in accordance to the rules of data cleaning in the WHO analysis guide (WHO 2018). Answers from participants 6 and 10 in the initial recording of PAL's were excluded from data analysis due to data entry errors in both cases involving extremes of values (>960minutes per-day in a PA domain) (WHO 2018 P.12), in addition to which both participants in different instances answered 'No' then entered values in the corresponding sections of a PA domain further invalidating their responses (WHO 2018, P.9). This meant that only 13/15 initial PAL's could be analysed respectively.

31% (4/13) participants classified as active initially, and 69% (9/13) inactive. 80% (8/10) classified as active at follow-up and 20% (2/10) participants classified as inactive at follow-up. 71% (5/7) of initially inactive participants were classified as active at follow-up and 66% (2/3) of initially active participants increased in PAL's at follow-up.

Table 2: Results from Study questionnaire and reported usual PAL

Participant	Shortened Questions					Reported PAL (from GPAQ)	
	2)Did MI	3) Did MI	4)Did you	5)Are you	6) Would	Initial PAL	Follow-up PAL
Number (#)	encourage you to engage in more PA	increase your motivation for PA?	come by any difficulties when performing PA?	pleased with how much PA you do currently?	you like to undertake more PA?		
2	Yes	Yes	Yes	n/a	Yes	Inactive	Active
3	n/a	n/a	n/a	n/a	n/a	Inactive	Inactive
4	No	No	n/a	Yes	n/a	Active	Active
7	Yes	Yes	Yes	Yes	Yes	Active	Active
8	No	Yes	n/a	Yes	n/a	Inactive	Inactive
9	Yes	Yes	Yes	n/a	Yes	Inactive	Active
11	Yes	Yes	Yes	Yes	Yes	Inactive	Active
12	Yes	Yes	Yes	Yes	Yes	Inactive	Active
13	Yes	Yes	Yes	Yes	Yes	Active	Active
14	Yes	Yes	Yes	Yes	Yes	Inactive	Active

Table 3: Comparison of results and usual PAL calculation from Initial and Follow-up GPAQ

PA domains	Vigorous activity at work (Digging/Construction)		Moderate activity at work e.g. (brisk walking)		Travel from place to place (walking/cycling)	
	Frequency (days per-week) x Duration (Total minutes)		Frequency (days per-week) x Duration (Total minutes)		Frequency (days per-week) x Duration (Total minutes)	
	P1–P3	P1–P3	P4–P6	P4–P6	P7–P9	P7–P9
Participant No.	Initial	Follow-up	Initial	Follow-up	Initial	Follow-up
1	-	-	-	-	<3x30	-
2	-	-	2x15	3x20	2x20	5x30
3	-	-	-	-	2x30	2x25
4	-	-	-	-	4x30	5x30
5	-	-	1x20	-	-	-
6	-	-	-	-	-	-
7	-	-	-	-	5x40	7x40
8	-	-	2x45	2x40	2x20	2x25
9	-	-	-	-	1x15	4x20
10	-	-	-	-	-	-
11	-	-	1x30	3x30	-	3x25
12	-	-	4x45	4x45	2x10	5x15
13	-	-	5x10	5x20	7x30	7x30
14	-	-	-	-	3x10	5x20
15	-	-	-	-	7x30	-
PA domains	Vigorous Recreational activity e.g. (running/football)		Moderate Recreational activity e.g. Cycling/Swimming/Volleyball)		Sedentary time (total minutes)	
	P10 – P12	P10–P12	P13–P15	P13–P15		
Participant No.	Initial	Follow-up	Initial	Follow-up	Initial	Follow-up
1	-	-	-	-	360	-
2	-	-	3x20	4x30	120	120
3	-	-	-	-	420	300

4	3x45	3x40	-	-	540	480
5	1x30	-	2x15	-	300	-
6	-	-	-	-	300	-
7	-	1x60	2x40	3x45	180	180
8	-	-	-	-	480	420
9	-	-	1x10	5x20	600	360
10	-	-	-	-	430	-
11	-	-	-	-	180	120
12	-	-	-	-	360	180
13	2x40	4x40	2x20	4x35	240	180
14	-	-	2x30	5x30	300	240
15	-	-	-	-	60	-
PA domains	Estimated PA per-week				PA Classification	
	(weekly frequency x duration=Total minutes per-week)		Total MET minutes per-week			
Participant No.	Initial	Follow-up	Initial	Follow-up	Initial	Follow-up
1	<90	-	<360	-	Inactive	-
2	130	330	520	1,320	Inactive	Active
3	60	50	240	200	Inactive	Inactive
4	255	270	1,560	1,560	Active	Active
5	80	-	440	-	Inactive	-
6	-	-	-	-	-	-
7	280	475	1,440	2,680	Active	Active
8	130	140	520	520	Inactive	Inactive
9	25	180	100	720	Inactive	Active
10	-	-	-	-	-	-
11	30	165	120	660	Inactive	Active
12	110	255	440	1,020	Inactive	Active
13	380	610	1,840	3,080	Active	Active
14	90	250	360	1,000	Inactive	Active
15	210	-	840	-	Active	-

Qualitative Results

Three main themes were identified that cut across the transcripts at various points, revealing participants views of MI in relation to any change in their perceived involvement in PA, all of which are explained below in detail.

Facilitators of PA

'Facilitators' in this context refers to the factors that encouraged PA participation as perceived by the respondents in the manner they felt this occurred. Participants expressed this point in two main ways:

(i) Knowledge of health benefits

Most participants expressed their views for having not been completely aware of the health benefits associated with PA prior to their MI experience and how this knowledge acted as a facilitator towards their involvement in PA as explored below:

"...there were some things I was unaware of, such as, it helps with your mental health and reduces depression by something like 30

percent...that was definitely an eye opener for me..." (P.2)-Line9-11

"I knew exercising is good, but I didn't have the complete picture like I did during the interview..." (P.12)-Line75-76

In the first line above, the participant conveys herself as being moved by the information she learnt about the benefits of PA, further expressing appreciation and an enhanced understanding of the essence of PA.

Some participants expressed that they previously knew about the health benefits of PA, in which case, the mention of it during their MI session, 're-enforced' the knowledge of it that they already had as illustrated below:

"I think I always knew about them... it's just the fact that it was a bit more reinforcement with statistics. So that sort of re-enforced what I knew of it."(P.2)-Line41-42

“the knowledge that it decreases the risk of illness, and heart disease and things yeah, it reinforced the importance...” (P.8)-Line15-16

A participant expressed no difference impacted by the knowledge of PA health benefits on his appreciation of the importance of PA, further conveying himself as a physically active person simply by nature and interests irrespective of the knowledge of these benefits.

“I was exercising before, so I’m not sure if that information would have changed my opinion or not.” (P.4)-Line26-27

(ii) Perceived benefits from PA

Some participants expressed their participation in PA as being enhanced by factors such as their observed experience of benefits derived from engaging in PA, further acknowledging PA as being useful to them as illustrated below:

“I feel less tired...and I’m more on my feet so I think it’s really helping...” (P.14)-Line32-33

“...it has become a routine for me and I think my body has adapted to it...” (P.7)-Line44

Barriers that limit PA participation

Some participants expressed that certain factors acted as limitations to allowing their participation in PA. These related to their personal beliefs and values, perceived responsibilities and commitments, and the extent to which PA was considered important to them. Participants conveyed this message in five routes:

(i) Time as a limiting factor

Given the nature of one’s job, and the importance society attaches to earning a living, independence and self-sufficiency, some participants considered the time spent on their jobs and other related commitments as limiting to their PAP as expressed below:

“I finish work and then I’m just so knackered by the time that I get home each day...It’s just that I didn’t have much more time to give over to exercise.” (P.8)-Line8-11

“It’s always just time really, just trying to find the time to exercise.” (P.4)-Line-18

A participant expressed ways in which efforts were made towards overcoming ‘time’ as a limiting factor to his PAP further conveying a sense of dedication to being physically active:

“If I found time in between my work schedule during the day, I tried to make sure I wasn’t just sitting and doing nothing.” (P.13)-Line34-35

(ii) Weather limitation to PA

Some participants expressed the weather condition as potentially being a determinant for their involvement in PA, interrelating an effect it may have on their mood, interests and the chances to partake in certain forms of activities that are of liking to them as evidenced below:

“... its summer time and I’ve been doing more work in the garden, just to keep myself moving which is not possible in the winter time... we are more inclined to stay in the house more, which makes exercise

more difficult really.” (P.12)-Line15-18

“The weather is a bit warm now so I could walk as much as I want to till I get tired and rest a bit before I continue to walk again.” (P.14)-Line 37-38

A participant expressed her desire to conquer ‘the weather’ as a perceived limitation to her

PAP by mentioning an alternative for when the weather does not favour outdoor activities:

“But I’ve decided that I’m going to have to make myself do it... I would put on some music and I will move to the music...preferably Scottish dance music, because I love that and it makes you want to move...” (P.12)-Line 43-47

(iii) PA misconceptions and perceived fears

‘Misconceptions’ in this context refers to certain beliefs and ideas participants nurse based on their views and understanding of PA as it appeals to them. Ways in which participants conveyed these fears or concerns as limiting their involvement in PA are evidenced below:

“...when your legs don’t feel like they are working properly it makes you feel less confident of walking.” (P.12)-Line 34-35

“I used to move a lot painting and all... I had to cut down on all that, I don’t want to get worse.” (P.3)-Line 12-14

“I feel I can do the much that I can for my age, with my health issues... I just feel, it’s a bit upsetting really you know...Its just when I think I’ve got to live with it now...because I can’t you know, do much of what I used to do” (P.14)-Line 18-22

In the last quote above, the participant interrelates her age with the amount of PA that she can take on and the health issues she experiences as further limiting how much she can do. She conveys a sense of displeasure with the desire of wanting to do more than these perceived barriers would permit her to.

A participant expressed a way in which she tried to combat a perceived fear she had that limited her PAP by demonstrating some self-proposed efforts such as self-talk and self-empowerment towards overcoming this limitation:

“The other day I wanted to go out and then I thought to myself, Oh dear! what if I fall when I go outside...then in the evening I felt I can’t be doing this to myself I can’t keep being in the house all the time, so the next day... I decided I wanted to go out and I did, and I’m glad I did because I decided that if I give into it I would develop a phobia and become frightened” (P.12)-Line 54-58

(iv) Pre-existing health conditions

Some participants demonstrated existing health conditions they had as further limiting to the amount of PA they could take on and in some cases affecting their interest in PA as explored below:

“I’ve been having a lot of pain in my lower spine, just in my back, but on my right side, it does sometimes make me feel not as interested in doing these exercises” (P.14)-Line18-20

“...when I had my accident and broke my hip, which has also affected my leg... it's more difficult to bend up and down but you have to keep trying”(P.12)-Line 22-30

(v) Self-activity perception

Given the human nature of nursing certain beliefs of one's self irrespective of reality with respect to personal and societal expectations, two participants expressed a perception of themselves being already active, and so did not feel the need to engage in more PA:

“I feel I do enough of those, but it probably would motivate me if I wasn't exercising.”(P.4)-Line 13-14

“Purely well I know that the recommended minimum is about a hundred and fifty minutes weekly, and I do probably three to four times of that.” (P.8)-Line 29-30

Perceived effects of MI

Considering the existence of individual differences and the varying level of interests and importance attached to living healthy, preventative measures and how society envisions these factors when considering PAP, participants expressed ways in which their lived experience of MI impacted on their participation in PA demonstrated in two main ways:

(i) Importance of PA

Some participants conveyed a sense of appreciation of the importance of PA in relation to its applicability to their current lifestyle based on their experience of MI, as evidenced below:

“...the fact is what really struck me is that the interview you see has stayed in the mind, it's a little reminder constantly of what I should be doing...”(P.12)-Line 9-11

“...when I think of the benefits I could gain, I feel the importance of moving more”(P.11)-Line 26-27

(ii) Motivation and PA Participation

Majority of participants expressed a sense of motivation from their experience of MI, further describing ways in which they participated in PA as evidenced below:

“...I'm walking more these days and I get to go gardening as well”(P.14)-Line-42

“...I would say it helped me to come out of my laziness...”(P.11)-Line-8-9

Preferences

Some participants expressed their preference for approach when receiving MI, in terms of its delivery to them. Further expressing interests for perceived barriers being specifically tackled alongside MI techniques during MI as explored below:

“...I will be able to do more if I know that nothing is stopping me or making me think I can't do it.”(P.12)-Line 80-81

“because then I won't have to worry much about all these problems that won't let me do the much that I'd like to.”(P.14)-Line 27-28

In the last quote above the participant conveys her desire for difficulties pertaining to her PAP being particularly addressed. She further depicts a sense of interests in PA given the existence of these limitations ‘that won't let her’ engage in as much PA as she desires.

Discussion

This study aimed to establish how patients on an AMU perceived MI as an approach of delivering PAA to them based on their perceived involvement in PA. Findings from this study are based on the views of its participants and not all patients admitted on an AMU. However, this understanding could help direct future approach towards encouraging PA participation for patients in this setting and others like it.

The main findings suggest that most participants (7/10) participants found MI helpful for encouraging PA and most participants felt they engaged in more PA after receiving MI during their hospital admission. However, patients perceived certain limiting factors to their PAP which needed to be individually tackled. Most participants perceived the knowledge of the health benefits of PA conveyed to them during MI as a major facilitating factor for their PAP in addition to their experienced benefits from PAP. A few participants (3/10) did not feel that MI elicited any change in their perceived PA involvement. Although, one of them felt they were motivated but could not find time to practically participate in more PA. All three cases where participants felt that MI did not improve PAP, a secondary factor, such as lack of time for a preferred form of PA or a misconception of increasing PA involvement being potentially harmful, were identified limiting factors that hindered MI from having an effect.

Many participants wanted MI to be incorporated with methods to tackle specific barriers they had that limited their PAP. These barriers included time, the weather condition, perceived fears for PAP and certain health conditions that made PA ‘difficult’ for them to do. Participants felt that if these limitations could be addressed in addition to MI techniques to enhance their motivation for PA, they could then further engage in more PA.

Most participants who perceived MI as helpful at increasing their usual PAL, reported higher PAL's by the follow-up period. Participants who did not view MI as effective at increasing their perceived PAL's reported no obvious difference in-terms of PA classification, between their initial and follow-up PAL's. An exceptional case was a participant who perceived them self as active, although classified as inactive in terms of PA classification, both at initial and follow-up PAL's.

Comparing the study findings to existing literature, only one other study has assessed the use of MI for brief PA advice in a hospital setting [32]. As this was a quantitative study and ours was qualitative, direct comparison of results is not possible.

The study by Harland et al, sought to compare a single MI session, to six MI sessions and a control group. 523 adults aged 40-60years, were recruited from a hospital setting. Data collection took place at baseline, after 12weeks and after 1year. This study found a significantly higher PA outcome in the intervention groups at 12weeks as compared to the control. A slightly higher outcome although insignificant, was present in the group that received six MI sessions with incentives offered as compared to those that received

a single MI with or without incentives offered.

The aspect of this study that found an improvement in PA outcomes of the groups that received MI at short-term follow-up, may be comparable with our qualitative and quantitative results, where majority of inactive participants 71% (5/7) classified as active at follow-up and previously active participants increased in their level of PA participation 66% (2/3). Although, our study did not set out to draw any significant quantitative conclusions. Additionally, the study by Harlan et al did not mention the specific hospital setting where it was conducted, which limits its applicability to patients on an AMU setting [32].

Strengths and Limitations

Strengths

A strength of this study is the choice of the worldview being pragmatism, which allows a combination of approaches in a manner that stories and numbers could act as pillars that support each other in generating more conclusive findings. Qualitative and quantitative findings were triangulated to allow a comprehensive exploration of participants' views of MI, where triangulation is key to strengthening confirmability in qualitative research [19]. Although no quantitative conclusions were drawn, findings from both perspectives aided our understanding of how patients perceive MI in terms of their PA participation. Data collection took place until data saturation had been achieved by the 10th interview, where no new theme could be identified [33]. The framework approach to data analysis used in this study, enabled a comparison between similarities and differences in the views of participants, adding to the strength of data analysis process [34].

Further to this, three researchers took part in the analysis process, enhancing rigour in data analysis and dependability of findings (Dixon Woods 2001; Tobin & Begley 2004) [35,36]. The analysis process involved contacting participants, where respondent validation is known to strengthen confirmability in qualitative research [28].

Limitations

A limitation faced during the recruitment process in the study was the unpredictable nature of responsiveness from participants, which led to an inevitable loss to follow-up, increasing chances of attrition bias [28].

Even though a fair balance in the demographics of participants and non-participants, most non-participants were females below 55years, which may limit our understanding of how females within this age group in this setting perceive MI. This limitation could impact on transferability of findings to similar target groups in homogenous settings.

A limitation to the data collection process, was the dependent nature of interviews on the telephone network connection at the time they were facilitated, which could interrupt the general flow of the interview process. Further to this, without face-to-face meeting, the interviewer could not observe non-verbal cues, signs and body language, which could be useful for understanding and empathising with a participant's situation, building a rapport such that they are open to share their thoughts and feelings on the issues discussed.

Conclusion

Most participants in this study (7/10) found MI helpful for

encouraging PAP for them. This study also highlighted that the majority of patients were not completely aware of the extent to which they could benefit from regular PA. In which case, knowledge of health benefits, was an important aspect of encouraging PA during MI delivery. Patients may undertake more PA if they knew how much they stood to benefit from being active. Further to this, patients in this study, expressed certain factors that limited their PAP. Future studies may consider combining individual methods towards tackling perceived barriers with MI techniques when delivering MI to patients in this setting.

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