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Chronic pain healthcare workers' challenges in pain management and receptiveness towards VR as an adjunct management tool: a qualitative study

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Abstract

Background Chronic pain is often a debilitating condition that affects individuals physically and mentally. Reliance on pharmacotherapy for pain management comes with risks of analgesic misuse and dependence. Hence, non-pharmacologic treatment plays a crucial role in pain management. Virtual reality is a novel method in chronic pain management. However, there is little understanding about healthcare providers' perspectives on the use of virtual reality technology in managing chronic pain. This study aims to explore the current management challenges faced by chronic pain healthcare providers and their perspectives on using virtual reality as adjunctive therapy in managing chronic pain.

Method Individual semi-structured interviews were conducted among all chronic pain healthcare providers in a tertiary hospital. The interviews were analysed using qualitative thematic analysis.

Results Eight chronic pain healthcare providers participated in this study. Financial issues were cited as one of the biggest barriers to utilisation of non-pharmacological treatment. Participants highlighted the importance of psychosocial support from family and healthcare providers. Challenges identified included absence of patient engagement and lack of awareness about pain management among healthcare providers as well as the lack of an integrated multidisciplinary approach in our healthcare system. Participants were receptive towards the use of virtual reality in chronic pain management and offered ample opinions and suggestions for its application in chronic pain management.

Conclusions A multilevel, multifaceted approach is needed to improve chronic pain management. Virtual reality technology could be considered as an adjunct therapy to address some of the challenges and limitations identified in this study.

Keywords Chronic pain, Virtual reality, Healthcare providers' perspectives, Pain management

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Background

Chronic pain is a distressing and multifaceted problem that affects a significant portion of society today. It has been estimated to affect up to 43% of the population in the UK [1] and more than 30% worldwide [2]. In a local study in Singapore, the prevalence of chronic pain was found to be 8.9% in 2006 [3]. The authors suggested that this figure is likely to increase due to the growing size of aging population in Singapore [3].

Chronic pain needs to be addressed for multiple reasons. To the individual patient, pain can be physically debilitating, and can stress the patient mentally and financially [4–7]. Moreover, chronic pain is taxing on society's resources. Patients afflicted with chronic pain may function sub-optimally, leading to decreased work productivity and a negative societal socio-economic impact [8–11].

Research has shown that management of chronic pain requires a multidisciplinary approach encompassing biopsychosocial aspects [12–16]. The importance of seamless coordination in multidisciplinary and multi-modal care must be emphasized. This involves engagement of stakeholders including but not limited to doctors, nurses, physiotherapists, occupational therapists and clinical psychologists [17].

In this digital age, there has been increasing interest in utilising technology to enhance treatment methods. E-health applications such as internet-delivered cognitive behavioural therapy and smart-phone applications for self-management of pain are being explored as part of multimodal care [15].

Of Particular interest is the use of virtual reality (VR) as a non-pharmacological adjunct in the management of chronic pain [18]. VR allows the patient to be immersed in a multi-sensory experience with interactive components in a 3D simulated virtual world. It is increasingly being employed and studied as an adjunct therapy for chronic pain [19]. VR affords the patient the ability to manage chronic pain through mechanisms such as distraction from painful stimuli, shifting of focus and developing one's skills in modulation of the processing of pain [20–22]. In one study, VR was shown to reduce one's perception of pain by an average of 33% [23]. Examples of VR management techniques include meditative experiences [20] and engagement in a virtual fantasy world [23]. Therefore, use of VR is a form of chronic pain self-management in which the patient can engage [24, 25].

Although there is increasing recognition of the utility of VR in management of chronic pain, there are few studies that explore the perspectives of healthcare providers on using VR in this context. It is crucial to understand the perception of potential users to ensure an ideal design and content of VR for successful implementation. Hence,

in this study, we explore the challenges that healthcare providers face in chronic pain management and their receptiveness towards and perspectives regarding using VR as an adjunct management tool.

Methods

Study design

We used a qualitative descriptive design to explore the challenges faced by healthcare providers in managing chronic pain and their perspectives about utilizing VR technology in chronic pain management. Qualitative descriptive design is the method of choice when straightforward descriptions of phenomena are desired and is widely used in research on pain management [26, 27].

Sampling and study participants

Purposive criterion sampling was used for this qualitative study. This sampling method enables the selection of information-rich cases, which can provide insights and in-depth understanding of each phenomenon [28]. All current chronic pain healthcare providers in a tertiary hospital with at least 6 months of working experience in the field of pain medicine were invited to participate in this study.

Data collection

Individual face-to-face semi-structured interviews were conducted. The interview guide which is presented in the supplementary material was developed by the study team for this study. The guide was to ensure that the same basic lines of inquiry were pursued with each person interviewed. The interview guide contained questions regarding healthcare providers' experiences and challenges in working with chronic pain patients, their experiences with VR technology, and their opinions on using it in chronic pain management. One interviewer interviewed all participants and pseudonyms chosen by participants were used during interviews to ensure anonymity.

Data analysis

Transcripts were analysed using thematic analysis and abductive approach was employed. Interviews were audio-recorded and transcribed verbatim. The transcripts were checked against audio recordings to ensure accuracy. Thematic analysis was performed according to the guideline developed by Braun and Clarke [29]. A pragmatic approach was employed, integrating both inductive and deductive elements during the data analysis. Coding and theme development were carried out through an iterative process. QSR NVivo V.11 for Windows was used to manage and analyse the data.

Ethics statements

Ethics approval was approved by the SingHealth Centralized Institutional Review Board (CIRB Ref. 2021–2103), Singapore. All methods were performed in accordance with the Declaration of Helsinki. Written informed consent was obtained from each participant before the study was conducted.

Results

Participant information

Eight healthcare providers (HCPs) were interviewed including doctors, nurse, psychologist, and physiotherapists. Response rate was 100%. These HCPs have had years of experience in managing patients with chronic pain, ranging from 3 years to more than 20 years. (Table 1).

Table 1 Characteristics of participants

ID	Age	Gender	Profession	Duration working with Chronic Pain's patients
01	56	Male	Doctor	> 20years
02	44	Female	Psychologist	5 years
03	35	Female	Physiotherapist	7 years
04	47	Female	Advanced Practice Nurse	15 years
05	40	Female	Physiotherapist	3 years
06	44	Male	Doctor	9 years
07	39	Male	Doctor	3 years
08	41	Male	Doctor	6 years

Themes

The findings are presented in two themes; Theme 1: perspectives on current pain management, and Theme 2: perspectives on utilizing VR in pain management. The subthemes under Theme 1 were categorized into patient's level, HCP's level, and health system's level. The overview of main themes and subthemes were described in Fig. 1.

Theme 1: perspectives on current pain management

Challenges & limitations

Challenges at Patient's level

Biopsychosocial issues People with chronic pain may suffer from not only physical pain but also the resultant psychosocial consequences. They often experience lack of understanding and support from family and sometimes even from HCPs about their pain. This also affects their work, sometimes to the extent of losing their jobs. The journey of chronic pain patients is long and expensive; where they face challenges in every aspect of their life-physical, psychosocial, and economic hardship.

“these patients often have.. uh.. many others.. uh.. issues. So, when we talk about pain is not just pain, you know there's the whole biopsychosocial thing. So, they have their disease problem that may be the start of maybe the initial cause of their pain, or may be the continual cause of their pain, but they also

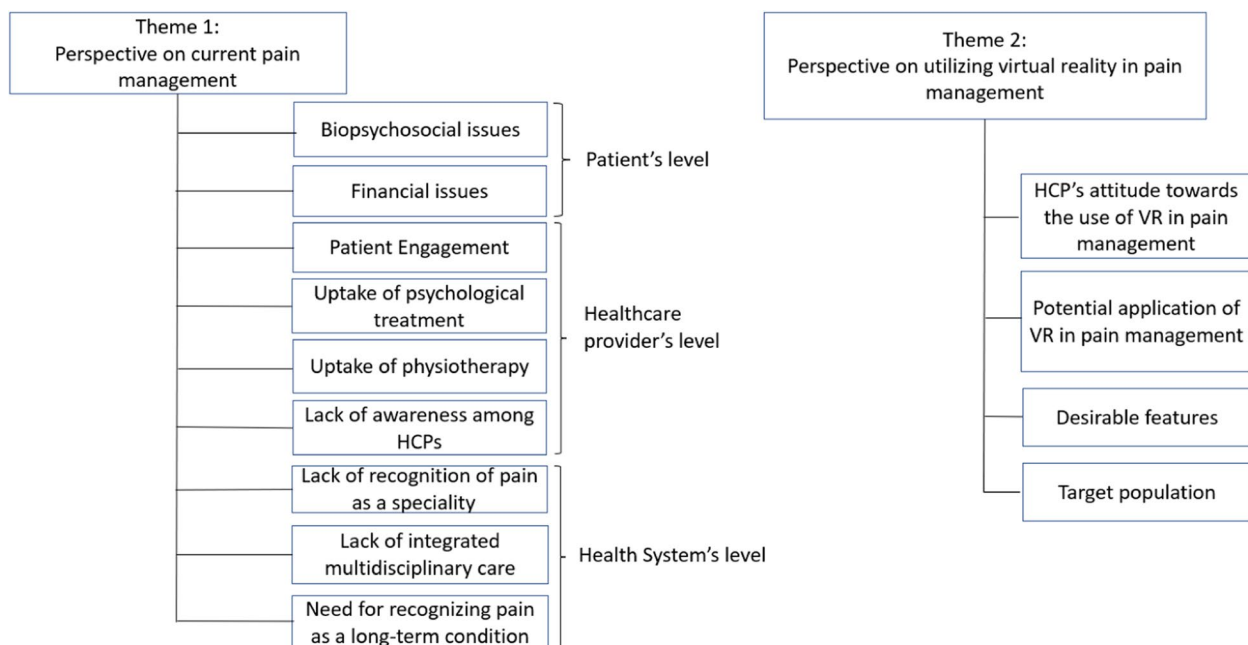


Fig. 1 Overview of themes and subthemes

have other issues like psychological issues that may be pre-existing or may have come about from their years of having to suffer chronic pain. And of course, social issues lah. Chronic pain is costly. So you know, they may have lost their job, so they have a lot of financial challenges, they have a lot of issue with their family, the family don't believe them. Sometimes doctors don't even believe them. sometimes I also don't believe them. So yeah, so they have..uhm.. so these are the challenges that we face." [ID-01, doctor].

Financial issues for patients

Financial cost is a significant barrier for patients to properly manage their pain. Chronic pain management involves interdisciplinary multimodal management of pain education, pharmacological treatment, pain physiotherapy, pain psychology and pain interventions. Financial subsidies in our healthcare system are finite and many patients have difficulties affording non-pharmacological treatments, resulting in low uptake and high drop-out rates in pain physiotherapy and pain psychology.

"I know that majority, I mean, mostly majority, maybe at least more than 50% of them do have payment issue as well. So, the counter staff do have some difficulty dealing with them. Sometimes they are, sometimes labelled as the bad debtors in the.. in the [sic] system. And I think most of them also, um.. in the process of doing dealing with legal issues as well lah.. maybe it's the claiming of insurance or, you know, and things like that. So, um.. yeah, it is a challenge as well, for the payment issue, some of them yeah. [ID-03, physiotherapist].

Challenges at healthcare providers' level

Patients' engagement

HCPs have challenges in engaging patients due to patients' limited awareness and understanding regarding pain management. Most often, patients expect a quick fix for their pain and do not realize that pain management is long-term. They are not aware of the need for non-medical treatment and are also unable to afford it. Sometimes, patients come in with a set agenda based on the information they gathered from internet search. HCPs mentioned that the usual allotted 30-minute is not sufficient for chronic pain patients as it involves educating, counselling, and managing expectations. HCPs emphasised the need to educate patients more when it comes to pain management.

"...there are people coming in with the Google advice. And I think that's almost all pervading in most

spheres of our lives, no matter how hard you try, patients come with a set agenda and a half the time is actually spent telling them what is what and what is what not. And I think that undoing takes quite some time and then sitting down and trying to get a total totally different deal. [ID-06, Doctor].

Uptake of psychological treatment

Uptake is low for non-medical treatment for chronic pain, especially for psychological treatment. This is mainly due to the stigma of seeing a psychologist, the non-subsidised costs and the lack of understanding in the importance of these treatments. It may also be that patients do not know the difference between a psychologist and a psychiatrist or what services are entailed. "some patients will say, "Oh, no, no, I don't think I need to see a psychologist lah. There's no point, just go there and talk right?" Yeah, then some patients say, "I don't have mental problems why do you want to refer me to a psychologist, right?" Yes, we are not even referring them to psychiatrists. Yeah, we are just referring them to psychologists. And then, some patients say okay. They reluctantly say okay, but they don't turn up in clinic." [ID-04, Nurse].

Uptake of physiotherapy

Generally, uptake of physiotherapy is better than that of psychological therapy. However, challenges preventing a higher uptake are such as the cost of physiotherapy and the need for continued participation from patients.

"physiotherapy is always a problem, it's again cost, because they have to see them a few times. And number two, uh.. physiotherapy is uh.. requires patients to do things themselves" [ID-01, doctor].

"I think the other challenge that I find is that to get them to exercise, because they're already in pain, and then having asking [sic] them to exercise is another greater challenge because they voice it that you know, my pain is the one that's limiting me to move. But we all know that the importance of movements of exercise to get them to stay fit, to get them to be more flexible. Um.. yeah.., so I think that is the greatest challenge for myself as a physio." [ID-03, physiotherapist].

Lack of awareness about pain management among HCPs

When it comes to pain management, lack of awareness exists not only among patients but also among HCPs. Some HCPs have limited awareness about chronic pain and inadequate knowledge in treating it. This increases the challenges faced by patients as they are unable to

receive understanding and support they require from HCPs.

“one is the healthcare workers understanding towards chronic pain. Yeah, so for example like sometimes the nurses will ask me “eh.. sister (a term used to address nurses), how come this patient ah.. with chronic pain, he always says his pain is very bad, you know, can...can give us a score of 7, 8, 9. But then patient is still okay what, you can see him walking in the ward, can still do some of his things. So, you know, we don’t believe that he has so much pain.” Yeah, so... so that is one sister’s understanding of healthcare workers towards patient’s chronic pain. Yeah, so this, I believe there is still not a very comprehensive understanding from some healthcare workers lah towards patients with chronic pain.” [ID-04, Nurse].

Limitations at health system level

Lack of recognition of pain management as a speciality

Another challenge faced by HCPs is the lack of recognition of pain management as a speciality. It is currently grouped within the anaesthesia speciality, resulting in limited resources which in turn lead to limited care.

“if you’re not a specialty, then sometimes it may be difficult to ask for funding, ask for resources, ask for support because a lot of us doctors are not getting any younger and uh.. also because the number of patients are also getting more. So sometimes, we also limit the amount of care depending on how much we can provide” [ID-01, doctor].

Lack of integrated multidisciplinary care

HCPs highlighted the need to have integrated multidisciplinary care to improve pain management. Currently, it is a physician-led model where medical treatment is the core of pain management with non-medical treatments as peripheries. This segregated care model has affected patient’s treatment. There is also no direct referral between disciplines, resulting in longer waiting time for patients.

“so for this group of patients, internationally, actually, the focus is very much on multidisciplinary programs. Not so much um.. just medical treatments alone. So, the ... I mean, research has shown that a multidisciplinary program definitely benefits a patient. Yeah, so for us, in comparison with the international treatment standards, we are still not there yet. So locally, I think in Singapore context, we are still focusing a lot on just medical treatment.” (ID-04, Nurse).

The need for recognizing chronic pain as a long-term condition

HCPs pointed out the need to recognize chronic pain as a chronic disease just like diseases such as diabetes and hypertension. Cost is one of the key barriers for patients to get treatment especially for non-medical treatment. With this recognition, resultant subsidies could reduce the financial barrier for chronic pain patients.

“Till it’s not classified as a LTC, a long term condition, I don’t think the subsidies will come. I think there’s lots of subsidies for hypertension, for diabetes, there’s a sort of stoppage point in polyclinics where they ask for these things, because it’s that way it’s dealt. And if we don’t reach that stage, I don’t think it’s going to happen. But if subsidy is an issue, I think it has to be tackled with, in fact, if you send people to occupational therapy, for assistance of seeing the occupational therapist, there is no subsidy, it costs \$1,200.” [ID-06, doctor].

Theme 2: perspective on utilizing VR in pain management

HCPs’ attitude toward the use of VR in pain management

Generally, HCPs have a positive attitude toward the use of VR in pain management. This could be because most of them have experiences with VR in various settings including entertainment. Even those without personal experience with VR believe it could be beneficial for pain management. .

“Well, I guess because in this modern world, we are moving towards technology, definitely. Um.. I.. I.. personally don’t know. I mean, because I don’t really use that. But I guess it could be a way of distraction for the patient to be away from the pain itself.” [ID-03, physiotherapist].

Potential application of VR in pain management

HCPs envisioned for VR to be used as a distraction from pain such as relaxation therapy using visual immersive features of VR. A participant termed it “pain holiday” i.e. allowing patients to choose their favourite scenes and music to have an immersive visual relaxation experience. Some cautioned that there is a need to go beyond distraction, for example, to use it as an education tool to equip participants with skills and knowledge to manage their pain.

“So simply terming that as distraction may not work unless we put into the patient that “See, look, it’s an education tool. Now you were in that mode, were able to do so much of exercise, so much of meditation, so much of mindfulness. That means you’re

capable of doing it, we're going to try that you build this one on yourself. So that is one way." (ID-05, physiotherapist).

Desirable features

Several features were suggested by HCPs. Low cost / affordability is the most important feature mentioned. Other features mentioned are light, portable, user friendly, wireless function, good battery life, and suitability for all settings like hospital, clinic, and home. Some special features like incorporating hearing aid in the VR headset for patients with hearing impairment and waterproof function for hydrotherapy were brought up as well. Suggestions also included culture sensitive designs.

"Well, of course portable be good then they can use it anywhere, but I think most of them will be using it at home. I think my main concern would be the affordability of it. Yeah, I mean, I think most of our chronic pain patient they already have issue paying the amount of money for their treatment." [ID-03, physiotherapist].

Target population

Some HCPs felt that age is a factor in determining the target population and that younger populations would be more receptive to this technology. A few HCPs felt that this technology may not be suitable for the older population as they may be less receptive to new technology, and more likely to have conditions that may affect VR experiences such as hypertension, giddiness, and balance issues.

On the other hand, a few other HCPs felt that age was irrelevant in consideration of the target population, and that they should instead be identified based on patient characteristics, such as patients with mild to moderate pain, nociplastic pain or patients with no critical condition and ability to focus for 15–20 minutes.

"I would envision it to be more useful in patients with more...um.. sense, what this group of pain syndromes which we call nociplastic pain, or uh.. patients with a lot of central sensitizations, as well as patients with a lot more psychosocial burden.

... certainly, age, I think and cultural contexts may be potential barriers. Um. elderly being, uh.. who are not necessary, elderly, but um I think your level of IT savviness would play a part. And um.. the receptiveness, I.. I think, certainly um.. the elderly generation sometimes do have the perception that these uh...uh not as, even amongst um.. my chronic pain patients, some elderly tend not to agree uh.. to our mutli MDT [multi-disciplinary] kind of approach to pain and they are looking more for...interventions, surgical,

medication that I think VR is not going to be useful for them for that purpose." (ID-07, doctor).

Discussion

This study investigated the current challenges faced by HCPs and their perspectives with regard to utilising VR to complement the current methods of treating chronic pain. Financial difficulties were repeatedly cited by participants as a barrier to patients seeking help from healthcare professionals and their willingness in uptake of non-pharmacological treatment. Participants were receptive of using VR in chronic pain management and provided a range of suggestions on application, potential features and functions, and target population for VR.

The importance of psychosocial support, from both the patient's family and healthcare providers in the recovery of chronic pain patients, has also been emphasised. These limitations are not unique to the local context, with similar challenges being identified by healthcare providers overseas [30]. Interestingly, some of the challenges raised by HCPs in this study were also reported as barriers by patients in other population as well [31]. Lack of integrated multidisciplinary approach, short consultation time, and lack of general practitioner's (GP's) knowledge on pain management were common views shared by both HCPs in this study and patients in another study [31]. In this study, fragmented care has also been cited to have a large impact on patient care, as many participants urged the need for a system that embraces a multidisciplinary approach. The ability to engage patients in their recovery journey is also imperative. However, participants mentioned that the allocated time was not enough to thoroughly understand the medical history of patients and provide proper consultations especially when patients were looking for a quick fix and would need to adjust their expectations. Hadi et al. also reported that patients were frustrated by short consultation time with the HCPs [31]. This highlights the need to have longer consultation time to improve engagement with chronic pain patients.

The perception that GPs lacked knowledge to manage chronic pain was also previously reported by patients [31]. Healthcare professionals' lack of awareness and knowledge about chronic pain may be viewed as lack of empathy by patients [31]. Hence, there is a need for educating healthcare professionals in chronic pain management to provide better support and care to patients. There has been suggestion to include chronic pain management in the curriculum for medical professionals [32]. Education on chronic pain is not only needed for healthcare professionals but also for patients. By educating patients, it may improve patient's expectation from healthcare professionals and adherence with both medical and non-medical treatments.

In this study, sentiments towards the use of VR as an adjuvant tool among the participants are largely positive, with many ideal features for the VR device suggested. Participants also suggested that education, physiotherapy and psychological exercises be incorporated into the VR modality, allowing for a more integrated and comprehensive treatment plan via VR.

The potential of using VR as an adjunct management tool - how it addresses the challenges faced

VR is an up-and-coming non-pharmacological approach that is increasingly gaining interest in the management of chronic pain [20, 24, 25]. The healthcare providers in this study largely echoed those sentiments. We discuss in the following how VR aids in addressing the challenges identified.

Promoting self-management and change in behaviour

Cognitive behaviour therapy (CBT) has been one of the first-line behavioural intervention in the management of chronic pain [33–35] and several meta-analysis have shown that self-administered CBT computer programs are effective and feasible [36, 37]. The ability to perform CBT remotely also addresses potential restrictions on in-person therapist session, such as those implemented during the COVID-19 pandemic.

There has also been increasing interest on the effectiveness of self-management in chronic conditions [38, 39]. The healthcare providers in this paper echoed the importance of self-management when dealing with chronic pain. VR is a conduit through which self-management approaches could be taught and reinforced.

VR in promoting continuity of care

Participants reiterated the importance of portability of the VR product. We know that continuity of care is important in the management of all disease conditions, including chronic pain. This is potentially achieved with VR as it is available as a portable product which can be used safely in one's own home environment, or wherever the patient prefers. This ease of accessibility to the treatment would likely promote continued usage.

VR can reinforce the issues raised and concepts taught at each session. VR also aids in the continuity of care as patients could revisit techniques learnt at each session while waiting for their next clinic visit.

VR in education and engagement

In this study, HCPs expressed that patients are not very receptive to non-pharmacological treatment largely because they do not see its potential in solving their problems. Furthermore, patients also feel that it adds unnecessary cost to their treatment.

Participants of the study suggested incorporating educational materials into VR such as via videos. Should this be implemented, it could educate patients that chronic pain is a multifaceted problem that requires a multi-pronged solution. If VR successfully enables patients to understand the importance of non-pharmacological methods, it could potentially create a ripple effect in making the patients more receptive not just to VR, but also to the uptake of psychological and psychiatric treatment as well as physiotherapy. The importance of education via alternative means in optimising care for chronic pain patients in the local context is echoed by Su-Yin et al. [40, 41] If patient education is successfully incorporated into VR, this could also allow healthcare providers to channel precious consult time into counselling and managing the patient's expectations as well as chronic pain conditions. For instance, interactive learning modules on physical therapy, psychological therapy, medication and lifestyle management could be incorporated into the VR.

An additional benefit to patients being able to utilise the device at home would be that educational materials for the patient's family members could be incorporated. This way, it could help in improving the lack of support from the patients' family members, which was commonly cited by the participants as a challenge that patients face. Family members could possibly be more supportive of the patient if they understood the psychosocial factors behind chronic pain.

Furthermore, incorporating physiotherapy and psychological therapy into VR could also translate to greater time and cost savings for the patient, as they would not have to travel to the hospital for physical consultations as often as before. The added convenience for the patient could increase their receptiveness toward VR as a non-pharmacological treatment.

VR in encouraging multidisciplinary care integration

There is a lack of a seamless coordinated referral system between the various disciplines of the multidisciplinary team (such as the chronic pain specialist, psychologist and physiotherapist) which may result in delays in care. If system changes are made to enhance the coordination within the multidisciplinary team, this would greatly reduce care segregation and enhance continuity of care for the patient. However, a current management gap we face is that of reluctance of our patients to engage in pain physiotherapy and pain psychology due to disinterest or perceived ineffectiveness of these modalities. VR could play a role in bridging this gap through the development of educational VR modules in pain psychology and physiotherapy that teach the value of multidisciplinary pain care. With a high-fidelity and interactive environment, patients could be more willing to engage in such disciplines.

VR as distraction to manage chronic pain

Our participants also suggested that one potential use of VR is a distraction for pain. The use of distraction techniques has been employed in the management of unpleasant stimuli and these included playing video games, deep breathing exercises, listening to music and watching videos. The innovative use of virtual environments to create a pleasing situation has been shown to be an effective non-pharmacological way in the management of chronic pain [42]. This is achieved via sensory distraction to leave fewer resources for pain perception [20].

Potential in reducing social stigma

As VR could potentially be used at home with reduction in physical visits to the various specialties, it could potentially reduce the likelihood of patients being deterred from getting psychological help due to fear of social stigma associated with visiting psychologists.

Addressing challenges for VR use

VR has the potential to complement and enhance the current approach to the management of chronic pain. However, there are several issues that must be addressed before it can be widely implemented.

The need to recognise "chronic pain" as a chronic disease and major driver of disability to obtain financial support

It is a challenge for healthcare facilities to implement VR and to maintain its technology whilst bearing in mind the importance of maintaining affordability. If chronic pain is successfully recognised as a chronic condition in Singapore, subsidies granted would reduce the financial barrier for chronic pain patients.

It is therefore imperative for chronic pain to be recognised as a chronic disease and primary cause of disability and to obtain more financial support. With increased subsidies, plans could be put in place to loan patients VR sets so that they can recognise and experience for themselves the effectiveness of this modality in helping them with their pain. Further considerations could also include the hospital loaning VR devices to the patients with financial difficulties.

VR among the older generation: availability of support to bridge use of VR devices

Concerns were raised by participants regarding the feasibility of VR among the elderly. This was attributed to the possibility of VR affecting the elderly's sense of

balance. This could potentially be mitigated by only "prescribing" sitting VR activities for the elderly.

In addition, older patients are generally less receptive towards VR and find it difficult to use, intrusive and uncomfortable. VR is a relatively new technology that is likely more familiar to the young than the old. If the elderly are selected to participate in VR, there is a need to develop resources to educate and encourage the safe use of VR.

Strengths and limitations

There are certain strengths and limitations in this study. To our knowledge, this is one of the first few studies to look into HCP's perspectives towards the utilisation of VR as an adjunct to the management of chronic pain. Although only eight health care providers were interviewed in this study, there was a good representation of the various disciplines that enabled a balanced representation of the issue. Furthermore, the HCPs interviewed are experienced in the field of chronic pain medication with at least 3 years of working experience.

Another limitation was that the HCPs interviewed had limited experience in the use of VR in the management of chronic pain. Their perception of VR mainly comes from their own experience of VR in their personal lives which may not translate directly to using it in clinical practice. In addition, this study did not look into the perspectives of the patients with regard to utilisation of VR in management of chronic pain. Previous research by Garrett et al. suggests that including the patient perspective can aid in tailoring the VR experience to the target population [43].

Future implications

This study identified local HCP's challenges in managing patients with chronic pain. It also explored their perspectives and recommendations on the potential of VR in the management of chronic pain. Future research could include chronic pain patients' perspectives on challenges they face in obtaining treatment for their pain and their views on the potential of VR. Subsequent studies could also evaluate the effectiveness of treatment approaches for chronic pain involving VR locally.

Conclusions

This study provides insights from HCPs from various disciplines with regards to the challenges they face in managing chronic pain as well as their perspectives towards the use of VR as an adjunct management tool.

The results of the study identified various pain management challenges faced including financial limitations faced by patients as well as the chronic pain specialty,

inadequacy of identification and support for psychosocial aspects and difficulty in engaging patients. The need for an integrated multidisciplinary approach was also frequently reiterated.

VR was largely agreed on as having potential as an adjunct in the management of chronic pain, however, further discussion needs to be made with patients for their input with regards to the ideal features of such a management approach.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s44247-024-00073-0>.

Supplementary Material 1.

Permission to reproduce material from other sources

Not applicable.

Authors' contributions

L.W.L. conceived the idea, obtained the funding, designed and supervised the study and wrote the manuscript. T.H.Y wrote the manuscript. NEEK was involved in the study design, data collection and analysis, and edited and reviewed the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

Available on request to corresponding author.

The data underlying this article will be shared upon reasonable request to the corresponding author.

Declarations

Ethics approval and consent to participate

The study was approved by the SingHealth Centralized Institutional Review Board (CIRB Ref. 2021–2103), Singapore, Singapore. All methods were performed in accordance with the Declaration of Helsinki.

All patients provided written informed consent prior to study enrolment.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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