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Recommendations for Integrating Physical Therapy into an Interprofessional Outpatient Model of Care for People Living with HIV: A Qualitative Study

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ABSTRACT

Objectives: To determine factors to consider when implementing physical therapy (PT) into an outpatient interprofessional model of HIV care from the perspective of health care professionals and adults living with HIV.

Design: We conducted a qualitative descriptive study using semi-structured interviews (health care professionals) and focus groups (adults living with HIV). We asked participants their perspectives on strategies, barriers and facilitators to accessing and participating in outpatient PT, characteristics of physical therapists working in outpatient HIV care, content and structure of PT delivery, and program evaluation.

Setting: We purposively sampled health care professionals based on their experiences working in interprofessional HIV care and recruited adults with HIV via word of mouth and in collaboration with an HIV-specialty hospital in Toronto, Canada. Interviews were conducted via Skype or in-person and focus groups were conducted in-person at the HIV-specialty hospital.

Participants: 12 health care professionals with a median of 12 years experience in HIV care, and 13 adults living with HIV (11 men and 2 women) with a median age of 50 years and median of 6 concurrent health conditions in addition to HIV participated in the study.

Results: Overall impressions of PT in outpatient HIV care and factors to consider when implementing PT in outpatient interprofessional HIV care include: promoting the role of, and evidence for involving PT as part of an outpatient model of care, structuring PT delivery to accommodate the unique needs and priorities of people living with HIV, working collaboratively with a physical therapist on the health care team, and evaluating rehabilitation as an interprofessional model of care.

Conclusions: Multiple factors exist for consideration when implementing PT in an interprofessional outpatient model of HIV care. Results provide insight for integrating timely and appropriate access to evidence-informed rehabilitation for people living with chronic and episodic illness, such as HIV.

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STRENGTHS AND LIMITATIONS OF THIS STUDY

- To our knowledge, this is the first study to explore the role of and factors to consider when implementing physical therapy in an interprofessional outpatient model of HIV care.
- Exploring perspectives from adults living with HIV and health care professionals using multiple methods of data collection (focus groups and interviews) enabled us to gather perspectives and recommendations from a diverse stakeholder group involved in accessing and delivering HIV care to develop recommendations for integrating physical therapy into an interprofessional outpatient model of care.
- Health care providers and those involved in program development can use results from this study when developing or adapting interprofessional outpatient programs for adults living with HIV and multimorbidity.
- This study was completed in collaboration with a specialty HIV hospital in an urban Canadian setting and therefore, results may not be generalizable to low to middle income countries or rural or remote areas.
- This study specifically focuses on an interprofessional outpatient program for adults living with HIV; further study is necessary to determine the relevance of results to similar populations such as those living with other chronic conditions and multimorbidity.

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INTRODUCTION

Due to health care advances and improvements in combination antiretroviral therapy, people living with HIV are experiencing increased life expectancy and chronicity of aging and multimorbidity.[1-3] Compared to the general population, people with HIV had increased prevalence of mental and physical medical diagnoses, as well as multimorbidity, defined as the presence of several chronic conditions.[4] Many people living with HIV experience disability, defined as fluctuations in health, including physical, cognitive, mental or emotional symptoms and impairments, difficulties carrying out day-to-day activities, challenges related to social inclusion and uncertainty about future health.[5] Rehabilitation, including physical therapy (PT), has a role in managing and minimizing the spectrum of disability experienced by people living with HIV.[6] We recently described the role of PT in addressing physical, psychological and social aspects of health. Results of this qualitative study indicated the role of PT in HIV care is multidimensional and client-centered and should consider several contextual factors which have an impact on care.[7] Evidence supports the role of PT in enhancing functional mobility,[8] pain management,[9] peripheral neuropathy[10] and the role of rehabilitation interventions with older adults living with HIV and complex comorbidities.[11,12] Other evidence specifically demonstrated the benefits of specific exercise interventions among adults living with HIV.[13 14]

Despite evidence supporting the benefits, few people with HIV access PT services.[15] Barriers to accessing PT among adults living with HIV include lack of available services, stigma, lack of knowledge of health care professionals and finances.[16] As HIV transitions from a palliative to a chronic illness, novel approaches to PT care delivery may help to overcome barriers accessing PT for people living with complex chronic illness. Authors of a South African study advocated for home- and community-based PT in order to address financial barriers and mobility limitations.[17] A study from the United Kingdom investigated a physical therapist supervised rehabilitation class available to inpatients and outpatients, which provided HIV education and exercise to address clients' goals.[12] An interprofessional day health program for people with HIV in Vancouver, Canada, operational since 1997, does not include PT in the model of care delivery.[18] Casey House, a specialty hospital in Toronto, Canada, opened a day health program in 2017 with the goal of improving access and coordination of interprofessional health services for

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people living with HIV.[19] To our knowledge, this is the first to include PT services and offers a foundation for considering rehabilitation as part of an outpatient model of HIV care.

In a recent qualitative study, we identified eight contextual factors important to consider in interprofessional HIV care from the perspective of people living with HIV and health care professionals with experience in HIV care that include: aging, episodic nature of HIV, multimorbidity, competing priorities, continuity of care, stigma, resource security and social isolation.[7] These factors are complex and important to consider as evidence to inform how to best integrate PT within a model of HIV care. Interprofessional care is valuable for the provision of coordinated, comprehensive HIV care.[20-22] However, specific recommendations for how to integrate PT are currently lacking. Hence, the purpose of this study was to determine factors to consider in the implementation of PT in the context of an outpatient interprofessional model of care for adults living with HIV from the perspective of health care professionals and people living with HIV.

METHODS

Study design

We conducted a qualitative descriptive study comprised of interviews with health care professionals and focus groups with adults living with HIV.[23] This study was approved by the University of Toronto HIV/AIDS Research Ethics Board (Protocol Reference #33760). In this study, we used the day health program at Casey House in Toronto, Ontario as an exemplar to focus on factors to consider when integrating PT into an interprofessional outpatient service for adults living with HIV.[7 19]

Recruitment

We recruited health care professionals who self-identified as experts in the care of people living with HIV from Canada and the United Kingdom (UK). Health care professionals were defined as health providers who are registered or voluntarily designated by a governing body. Using purposive sampling, we recruited rehabilitation professionals from the Canada-International HIV and Rehabilitation Research Collaborative (CIHRRC) to ensure we obtained perspectives from a variety of professionals with experience in HIV care in interprofessional hospital and community

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based settings.[24] We recruited adults 18 years or older who self-identified as living with HIV via posters and word of mouth by Casey House clients and staff. Members of the research team identified themselves to potential participants as students in the Department of Physical Therapy at the University of Toronto who were advised by advisors throughout the research (KKO and SCC). A member of the research team obtained written or verbal informed consent from each participant immediately prior to each interview or focus group.

Data Collection

We developed semi-structured interview (health care professionals) and focus group (adults living with HIV) guides to explore considerations when implementing PT into an interprofessional outpatient model of care for adults living with HIV, using the Casey House day health program as an exemplar. A community member living with HIV with research expertise provided feedback on drafts of the interview and focus group discussion guides. Guiding questions were devised to explore perspectives in the following areas: strategies of how to enable access to an outpatient PT program for people living with HIV, barriers and facilitators to adults living with HIV participating in an outpatient PT program, characteristics of physical therapists that are important for working in outpatient HIV care, recommendations for content and structure of PT sessions in order to accommodate the unique needs and priorities of people living with HIV, and how to evaluate the PT program in the context of an outpatient, interprofessional model of HIV care. We revised the interview guide five times and the focus group guide once during the course of data collection to improve clarity of the questions and address specifics around evolving codes.[7]

We conducted and audio-recorded 12 face-to-face or Skype interviews with health care professionals and two focus groups at Casey House with adults living with HIV. Two research team members were present for each interview, and three were present for each focus group. One team member facilitated the interview (MA, SC, HD, AP) or focus group (MA) and others assisted with obtaining consent and documenting field notes (MA, SC, HD, EL, AP). We collected data either verbally post interview (health care professionals) or via a self-administered questionnaire (adults living with HIV) to understand participant demographics, disease characteristics and experiences working in HIV care (health care professionals) and experiences

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with PT (adults living with HIV). Interview and focus group audio recordings were transcribed verbatim and reviewed for accuracy. Further details on our methodology are published elsewhere.[7]

Data Analysis

We initially read the transcripts independently and noted context and first impressions.[25] We then used a conventional content analytical approach to code transcripts.[26] Data were organized using NVivo V10 software.[27] All members of the team independently read and coded five of the same transcripts (three interviews and two focus groups), and met seven times to discuss overall impressions, coding, and adaptations to guides for subsequent data collection. We developed a draft coding scheme based on the first four team-coded transcripts (two interviews and two focus groups) and ensured coding consistency with an additional team-coded interview. Pairs of two team members (HDB, MA,SC, EL, AP) independently coded the remaining transcripts and met to discuss coding and resolve discrepancies.[7] We identified common responses and terms in transcripts, and then grouped related codes into themes to highlight recommendations for integrating PT into an interprofessional outpatient model for people living with HIV. We defined each theme as it related to our study objective and organized the themes to clearly describe participant views and perspectives.[28] We analyzed categorical demographic variables using frequencies and percentages and continuous demographic variables using interquartile ranges (IQR).

RESULTS

Twenty-five individuals participated in an interview (12 health care professionals) or a focus group (13 adults living with HIV) of approximately 30-90 minutes between January and May 2017. Nine practiced in Canada and half (50%) were rehabilitation professionals (occupational therapist or physical therapist) and the others included a nurse, pharmacist, recreation therapist, social worker, physician and massage therapist. The health care professionals reported a median of 12 (IQR 8,16) years of experience working with people living with HIV and a median of 9 years (IQR 4, 12) working in a community setting, defined as care provided to people living with HIV outside of a hospital. Table 1 summarizes the characteristics of the focus group participants living with HIV. The majority of adults living with HIV were men (85%) and self-reported living

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with a median of six (IQR 3, 13) concurrent health conditions in addition to HIV. Approximately one third (36%) of participants living with HIV had no access to provincial social assistance or extended health benefits. Nine (82%) were current clients of Casey House and most (91%) reported being interested in attending a day health program for people living with HIV.

Table 1. Participant Characteristics: Adults living with HIV[a]

Characteristic	Number of participants	Percentage of Participants
Gender		
Man	11	85%
Woman	2	15%
Age (years), median (IQR)	50 (47, 55)	
Current marital status		
Single	8	73%
Widowed	2	18%
Currently working or volunteering	3	27%
Self-reported health		
Excellent	2	18%
Good	2	18%
Fair	5	45%
Poor	1	9%
Average gross yearly income before tax		
Less than $10,000 CAD	1	9%
$10,000 to less than $20,000 CAD	3	27%
$20,000 to less than $30,000 CAD	5	45%
$60,000 to less than $70,000 CAD	1	9%
Prefer not to answer	1	9%
Extended medical benefits coverage status		

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No medical insurance benefits other than provincial health care	4	36%
Benefits through a provincial social assistance plan	3	27%
Extended medical insurance coverage through work	1	9%
Other[b]	3	27%
Year of HIV diagnosis, median (IQR)	1997 (1995, 2002)	
Currently taking HIV antiretroviral therapy	9	82%
Viral load undetectable	7	64%
Number of self-reported concurrent health conditions (in addition to HIV), median, (IQR)	6 (3, 13)	
Commonly self-reported concurrent health conditions[cd]		
Muscle pain	7	64%
Dental problems	6	55%
HIV wasting syndrome	6	55%
Joint pain	6	55%
Mental health condition	6	55%
Experience with Physical Therapy		
Currently seeing a physical therapist	3	27%
Saw a physical therapist in the past year	6	55%
Never saw a physical therapist	2	18%
Commonly reported reasons for seeing physical therapist[cd]		
HIV or the side effects of treatment	8	73%
Other health conditions	7	64%
Physical health challenges	6	55%
Challenges carrying out day-to-day activities	6	55%
To help get back to leisure or recreational activities	5	45%

Legend: IQR: interquartile range; CAD: Canadian dollars;
[a] 11 of 13 adults living with HIV completed the demographic questionnaire (note: denominators may vary dependent on the number of participants who responded to each item in the questionnaire);

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[b]other funding included status card (government ID card for which some Indigenous peoples are eligible, and which provides some extended health coverage) and unspecified;
[c]reported by 5 or more participants;
[d]participants were asked to identify all applicable answers.

We present overall impressions of PT to provide context, followed by factors to consider when implementing PT in an outpatient interprofessional model of care using the following themes: promoting the role of and evidence for PT as part of an outpatient model of HIV care, structuring the PT mode of delivery to accommodate the unique needs and priorities of people living with HIV, working collaboratively with a physical therapist on the health care team, and evaluating rehabilitation as a component of an interprofessional HIV care. We integrated perspectives of both health care professionals with expertise in HIV care and people living with HIV to best represent recommendations for implementing PT as part of an outpatient, interprofessional model of care. Health care professionals are described as either rehabilitation professionals (physical therapist or occupational therapist) or other health care professionals throughout.

Impressions of Physical Therapy in Outpatient HIV Care

Participants living with HIV expressed perceived benefits of having access to PT in an outpatient model of care:

> *"When I walk, I'm not quite as strong as I used to be. I need to be careful when I walk. Physiotherapy, I think, will open up a whole new avenue for me and give me more confidence and actually, walking from A to B."* - *Person living with HIV - P7 (man)*

Another participant described how having quick access to PT may be beneficial to those experiencing acute challenges related to self care, housing or mobility:

> *"I think that might be a good idea, rapid access, someone coming in off the street who is HIV positive having a hard time walking, or, you know, not quite taking care of themselves, that can see someone fairly quickly, talk to them and maybe, you know, get some kind of physiotherapy." – Person Living with HIV – P1 (man)*

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One participant spoke about his challenges accessing PT in the past, attributed to having to pay out of pocket for services. He described how universal access to PT as part of an outpatient day health program could offer intermittent needs-based access to rehabilitation:

> *"I just didn't follow it [physical therapy] through because of the problem with paying and getting reimbursed. But if there was something like the day program and I could have accessed one appointment every 2 or 3 weeks I would have probably tended to the problem. The way it was I didn't do anything about it." – Person living with HIV - P6 (man)*

Health care professional participants described how an outpatient interprofessional model of care offered the potential to "*pull in those people who are reluctant to engage elsewhere*" and "*fill a big gap in the clinical and psychosocial care of our patients*". One rehabilitation professional discussed the value of a specialized outpatient model of care in this population:

> *"Why can't they [people living with HIV] access a musculoskeletal outpatient service or neuro outpatient service or general sort of physio clinics?... for some people living with HIV, where their disease is well controlled, they're not having social problems, mental health problems, that may well be true… but there's a fairly big proportion of people, or certainly a reasonable community of people living with HIV who have complex care morbidities and I think it's those people that really need... special services." - Rehabilitation professional - P11 (United Kingdom)*

Health care professionals suggested that an outpatient interprofessional model of care has potential to address gaps in the health care system by incorporating programs and services, such as PT that are non-existent or are inaccessible to people living with HIV:

> *"Because once you're out the door in our health care system, you're on your own. So the more guidance we give them [people living with HIV], the more education, the better. With our patients, a lot of issues come up because of their cognitive impairment, so even if they're told some things, they need constant reminders about how to take care of themselves." - Other health care professional - P3 (Canada)*

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Factors to Consider when Implementing Physical Therapy in Outpatient Interprofessional HIV Care

In order to adequately address the complexity of HIV care in a practical setting, we identified four themes regarding the implementation of PT into an outpatient interprofessional model of care: 1) promoting the role of, and evidence for PT in an outpatient HIV clinical setting and model of care; 2) structuring the PT mode of delivery to accommodate the unique needs and priorities of people living with HIV; 3) working collaboratively with a physical therapist on the health care team; and 4) evaluating rehabilitation as a component of interprofessional care.

1) Promoting the Role of, and Evidence for Physical Therapy in an Outpatient Clinical Setting

Role of Physical Therapy

Participants described the role of PT within an outpatient model of care involving physical, psychological and social aspects of health and including both health promotion and rehabilitation. Many participants living with HIV viewed the role of PT as synonymous with exercise, stating that PT in an outpatient interprofessional model of care would provide an opportunity to "*get help with exercises*" and engage in "*exercise together [with peers] or go walking together*". In addition, people living with HIV suggested PT could enhance social engagement and provide a venue to build the strength and functional ability to "*actually get up and begin to return to going to a theatre*".

Health care professional participants similarly referred to the role of PT within an outpatient interprofessional service similarly in a physical context such as "*cardiorespiratory, progressive resistance training, neuromotor exercises*" and "*balance… falls prevention*", as well as psychological and social aspects including "*motivation, inspiration, structure, meaning*" and taking a creative approach in order to "*find an activity that actually motivates someone*". Health care professional participants also viewed physical therapists as having a role in "*education*" and "*preventative health*" such as "*falls prevention*", "*secondary complications*" and "*pain*".

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Promoting Physical Therapy in an Outpatient Interprofessional Model of Care

Community and hospital-based health professionals noted the importance of information sharing between HIV clinics in the city and an outpatient service (day health program). They suggested that it was valuable for physical therapists to visit clinics and to present at rounds in order to inform the health care community about the role and evidence in addressing disability and promoting healthy aging with HIV, as well as practically how to access services for their clients:

> *"Every HIV clinic actually has some kind of rounds. A good way of promoting is to… offer just to do a rounds either what is being offered at [Name of site] or on a topic, on a physio related topic so what's new in treating or what's new in arthritis and HIV… you get to educate somebody but also are plugging the services at the same time." Other health care professional - P6 (Canada)*

Another health care professional participant, with experience working in an HIV-specific health centre discussed using social media, specifically involving the experiences of clients to raise awareness of PT and provide practical information about what PT is, and how services available can be accessed in an outpatient model of care:

> *"Always use social media. I think have a Twitter account, have a Facebook page, have a YouTube video of what physiotherapy at [Name of site] is. Those sort of things are important because then if you've got a really engaging video that has a physiotherapist and a service user in it saying this is what physiotherapy is, this is the services we offer, this is what happens when you come and then someone giving their personal experience of attending, that will make the world of difference." Rehabilitation professional - P10 (United Kingdom)*

Staffing and Support

Participants noted the role members of the health care team play in creating a welcoming environment. They indicated personal traits that would be useful for physical therapists to possess in order to facilitate engagement in PT such as "*warmth*", "*adaptable*", "*non-judgemental*" and possessing "*broad knowledge [of cardiovascular, neurological and*

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musculoskeletal physical therapy-related specialties and rehabilitation for people living with HIV and marginalized populations]".

People living with HIV and health care professional participants explained the importance of having a physical therapist who has experience in HIV care, and understands the physical, social and psychological complexities of living with HIV.

> *"I saw a physiotherapist, and … she didn't understand HIV, which is fine, …she was like, 'oh I've never seen somebody so young be so weak, I usually work with senior citizens', and just made me really feel like an alien, that it was like, 'I don't even want to work with her anymore.' And so that's why I'm kind of like, with something with [a specialty hospital] you feel like people already understand HIV, you don't feel like you have to give a lesson." - Person living with HIV - P3 (woman)*

However, some participants did not feel all PT services offered to people living with HIV needed to be HIV-specific or focused in nature. Some suggested partnering with other community health and social service-focused programs, which are not HIV-specific to provide adults living with HIV additional options to address their episodic disability, not only aging with HIV but other potential multimorbidity such as issues related to mental health or chronic pain:

> *"I think it's important that there is available knowledge on what other services can be referred to because not everybody wants to come to a HIV specific service. Just because you're positive doesn't mean you have to engage in a positive program." - Rehabilitation professional - P10 (United Kingdom)*

People living with HIV participants suggested involving PT students on the health care team, proposing that as an effective way of managing finances while mitigating stigma and providing a source of valuable education for students.

> *"It would be cheaper to have students to come as part of their program or schooling... I think it would help open up the door to, uh, people who are afraid of communicating with*

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HIV/AIDS… There is still stigma about HIV out there. I can only imagine what it is like, going to school, thinking 'oh god, I am going to work with HIV clients, I don't want to touch them, that sort of thing. But, get rid of the fear, educate yourself. Education is key- and this would be part of education." - Person living with HIV - P1 (man)

2) Structuring the Physical Therapy Mode of Delivery to Accommodate the Unique Needs and Priorities of People Living with HIV

Welcoming Environment

Participants emphasized the importance of a "*welcoming*" environment including "*bright and cheery colours*" to make it "*as much of a comfortable experience*" as possible. One health care professional noted that people with HIV may be more likely to access PT in an outpatient interprofessional model knowing that "*they can access more than one thing that's free*" in one location. Participants suggested reminder phone calls can be beneficial in promoting attendance for outpatient service appointments amid fluctuating health, various medical appointments and scheduling:

"I think that [an] appointment reminder is crucial for people like us who are inundated with appointments." Person living with HIV - P6 (man)

Group vs Individual Sessions

Both health care professionals and people with HIV expressed the benefits of group PT exercise and education sessions including peer support, motivation and cognition:

"Peer-engaged support, you pair people up, … we get to know each other, and you don't create dependent links that emerge as you're doing physio… pair people, encourage people, because then you forget a part of an exercise, and then my… peer remembers the rest of it." Person living with HIV - P12 (man)

However, both stakeholder groups also acknowledged the need for individualized PT sessions, specifically for initial assessments prior to joining a group, for supervision and with an acute or unique-needs client:

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"One-on-one is really good if the client has really specific goals around walking or safety or improving transfers… Group settings again have potential for group teaching or exercise class and also has that opportunity to bring folks together and feel like a community." Other health care professional - P5 (Canada)

Structured versus Flexible Models of Physical Therapy Care

Participants recommended that scheduled appointments should be available, but noted that the PT service would need to be flexible in order to facilitate access to people who may experience episodic disability with many compounding factors presenting as barriers to access:

"I think that having flexibility allows for options and allows for choices because living with HIV you can have one day that's great and the next is not so great because the condition is episodic in nature. So it's an episodic disability just like cancer, lupus, arthritis, MS that sort of thing. Even with in the day you can be great in the morning by 10 o'clock and then by 1 o'clock you're not feeling that great." Rehabilitation professional - P7 (Canada)

One health care professional participant described the benefits of a group-based approach offering a flexible (drop-in) attendance schedule in his work setting:

"We now have open access, which is, we have people attend, return or restart depending on their own health and disability. So the open accessibility almost enables people to take a bit more ownership over their health and they can engage in these things a bit more. They create a little bit more autonomy about what is important for them in a supervised, safe physiotherapy led environment." Rehabilitation professional - P10 (United Kingdom)

Goal-Oriented Interventions

Health care professional and people living with HIV participants expressed the need to engage in meaningful PT programs that are relevant and tailored to clients' goals, abilities, and preferences within the context of their day-to-day lives:

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> *"It's different when you're in a controlled setting like that [clinical], as opposed to walking the street on your own, so it's sort of like a clinical versus a day to day therapy. So even things like walking the sidewalks and learning how to not trip over things or learning to go up your stairs." Person living with HIV - P5 (man)*

One health care professional with experience working in an HIV outpatient setting emphasized the importance of an intervention-focused approach tailored specifically to clients' goals:

> *"When we're addressing what's meaningful and important to the individual that we're treating, if they engage with the process and engage with physical therapy or physiotherapy, we can achieve people's goals and we know that the majority of their goals are either body image concerns, participation in meaningful tasks, health and fitness or mobility." Rehabilitation professional - P10 (United Kingdom)*

One participant with HIV noted how participating in PT could allow individuals to feel a sense purpose in contributing to community:

> *"...they [people living with HIV] get involved in the community and I know that there's people at this table that are working at the food bank, and the physiotherapy can give them energy and extra strength and so with the physiotherapy… you are able to give back to the community and I think that's wonderful." - Person living with HIV - P12 (man)*

In order to address clients' individual goals and unique presentations, health care professional participants suggested stratifying interventions. Practically, this could involve "*different groups for people at different levels*" and a varying "*ratio*" of participants to support staff depending on factors such as "*cognitive problems*", "*comorbidities*", "*age*", and "*mood issues*". One rehabilitation professional participant noted:

> *"We need to make sure that what we're doing is... centred on the individual, so I think that everybody who you see, you should do a thorough assessment and kind of work out what their needs are." Rehabilitation professional – P12 (United Kingdom)*

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One participant living with HIV described his concerns regarding the potential of a group that was not the appropriate level:

> *"If I'm in a group setting and they're doing something that I find a bit difficult, I [want to be] able to go to a one on one and learn how to do it without taking away time from everyone else and learning for myself so I'm... secure enough in myself to know I can do the move without toppling over or bothering something." - Person living with HIV- P2 (man)*

Promoting Independence

One participant living with HIV identified that it can be "*very hard doing physiotherapy without [a physical therapist] in your room, because she'll come and make sure you exercise*" and another suggested how to overcome this challenge:

> *"The knee exercises you are doing in the studio or in the centre… record it for each participant so that each participant has their own disc to take home and follow-through because three days a week. Three days off, four days on. There are your instructions there." Person living with HIV - P13 (man)*

Health professionals with experience in HIV care described how PT resources and materials should be adapted to maximize retention, independence and adherence to PT programs:

> *"I think that ensuring if you are using any print material that you are using basic language… Easy to access information. If material is in print, can our clients read it?... Understanding that people might need to have the same session 2 or 3 times to retain that session." - Other health care professional - P5 (Canada)*

Sensitivity to Practice

People with HIV and health care professional participants noted the importance of physical therapists to adopt approaches sensitive to the complexities faced by people with HIV including

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the potential episodic nature of HIV, stigma, financial insecurity, and substance use associated living with HIV. One participant emphasized the importance of a "*safe space"* addressing the potential role in addressing stigma with HIV.

> *"I think that one of the key things is that providing physiotherapy in a safe space… which is a space which is maybe dedicated and specialized to people living with HIV… I think is incredibly important for some people. I think some people want the opportunity to know that even though they don't have to talk about HIV, if I want to talk about HIV in the context of why I'm here, I'm not going to be judged, I'm not going to be stigmatized against… I'm not going to encounter something negative. Rehabilitation professional – P10 (United Kingdom)*

Participants reported stigma as a barrier to accessing PT and suggested the first step in mitigating stigma is to simply acknowledge its presence. They also suggested offering a variety of group exercise classes for people with HIV who may identify with a certain culture or gender to ensure sensitivity to diversity and mitigate stigma:

> *"Certain cultures, men and women in the same room… partnering up and things like that… also gender… the trans community as well… so it would be engaging them as well." Person living with HIV - P6 (man)*

People living with HIV and health care professional participants recognized substance use as a barrier to participation in PT. One person with HIV suggested "*a harm reduction framework within the physiotherapy*" as an aspect of program development which addresses the needs of clients. Health care professionals noted concerns regarding the risk associated with allowing clients who are using substances to participate in PT due to impaired balance, judgement and potentially unstable vitals: "*I certainly didn't feel safe to bring people in [to physical therapy] who are on substances*."

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3) Working Collaboratively with a Physical Therapist on the Health care Team

Team Communication

Participants recognized the importance of communication to streamline referrals and to discuss progress of clients within the team. Discussions with the health care team can help to clarify "*the triggers for referral… the threshold for referral and … the appropriate pathway to facilitate engagement and accessibility*" within each area of specialty, including PT. The health care team should be knowledgeable of the other members of the team and services available to provide client-centered care. Some health care professional participants suggested regular meetings in which the team can discuss any concerns and specific clients which may be attending that day.

> *"I think communication is the biggest thing, so if you can build tools upfront like weekly meetings or even daily meetings… focusing on specific pieces of, like clinical issues that are coming up then, you're probably going to have more success in providing patient care to people." - Other health care professional - P4 (Canada)*

Some health professional participants suggested that PT may have a role in informing other health practices in regard to transfers, pain, physical impairments and mobility for clients. One health care professional participant who worked in an interprofessional setting described how the team can reinforce PT recommendations so that clients can be best supported, using personalized strategies and techniques in each environment:

> *"They [physical therapists] could inform the work that I do, and… it would probably inform what massage therapy does as well and what nursing does, it already informs what nursing does, but I think more heavily...nursing - our nurses are great at implementing the recommendations of physio." - Other health care professional - P2 (Canada)*

Interprofessional Group Sessions

Some health professional participants suggested models of care delivery with interprofessional sessions involving a physical therapist and another health professional, while others advised

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against it. One rehabilitation professional participant commented on the challenge of addressing competing priorities in a joint session:

> *"When we have more than one professional in the clinic room at the time, completely ineffectual. I did a joint clinic with a dietician, didn't work. There's too many people in the room, too many factors to consider, too many competing issues for prioritizing what's important at the time." - Rehabilitation professional - P10 (United Kingdom)*

However, another health professional commented on the potential benefits of a model that involved interprofessional collaboration to facilitate a shared group program:

> *"I would love to see a collaboration between physiotherapy and recreation therapy around some sort of exercise groups in the future within the Day Health Program. That would be something that I would- I think would be a really natural pairing and would work really well." - Other health care professional - P2 (Canada)*

Whether encouraging interprofessional groups or not, both health care professionals and participants living with HIV recognized the importance of identifying common goals in order to have an effective group session.

4) Evaluating Rehabilitation as a Component of Interprofessional Care

Many health care professional participants discussed the importance of evaluation to determine the successes and challenges of implementing a new discipline such as PT in an outpatient model of HIV care. The episodic nature of HIV, in addition to the complex physical, psychological and social domains of health affected, necessitate a broad approach to program evaluation. One health professional with many years of experience in HIV care reported:

> *"It's very difficult to find a uniform measurement tool to look at objective markers of success with physical therapy in a heterogeneous population such as …people with HIV. Which is the problem we face, which is why the subjective tools and… measurements are important. However, measuring success means measuring change over time and I think*

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that when you are looking at a condition that is episodic… I think it's important that we look at a range of different things. So I think there needs to be a battery approach." - Rehabilitation professional - P10 (United Kingdom)

Most health care professional participants suggested implementing a variety of evaluation methods, focused on client goals to capture subjective and objective components of evaluation.

"I think all evaluation needs to consider what the patient goals are, so to be less weighted around program goals and maybe being more focused around patient goals that might be one way to consider the evaluation." - Other health care professional - P4 (Canada)

One participant with HIV suggested evaluating PT as a new model of care should involve "*weekly or monthly check-ins… just a couple of simple questions*" for people with HIV to answer. Another suggested:

"Once you start getting clients, like the ones that are seeing the physiotherapist, ask them how its working and how they think it is going so you guys could know how everybody is doing with it." – Person living with HIV - P4 (woman)

Overall, participants recognized the importance of focusing on the clients' goals and perspectives to effectively and rigorously evaluate the model of care.

DISCUSSION

To our knowledge this is the first study to explore factors to consider when implementing PT into an outpatient interprofessional model of HIV care. The role of PT in HIV care is multidimensional and client-centered.[7] Our results recommending goal oriented and client-centred PT align with those in a conceptual rehabilitation framework for people living with HIV[6] and highlight the need for rehabilitation in outpatient settings to address prevention and healthy aging concerns such as mobility and social engagement. In the evaluation of a physical therapist led group rehabilitation program for people living with HIV in the UK, individualized goal-setting was beneficial, as 83% of participants achieved or surpassed their goals.[12] Client-centered HIV care should allow for flexibility to accommodate the potential episodic nature of HIV.

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Participants outlined barriers to accessing and engaging in PT, which stemmed from the chaotic lifestyle some people with HIV experience related to substance use, stigma, financial security, and basic needs (housing and food) in addition to the episodic nature of HIV. Brown and colleagues minimized these barriers by designing a program where participants were not required to attend weekly, but free to attend and restart as able.[12] Collectively our findings highlight the evolving role of rehabilitation beyond tertiary care to that of primary and preventative care as a mechanism for health promotion, prevention of multimorbidity, and healthy aging with HIV.

Participants discussed the importance of a physical therapist working in an outpatient program to maintain communication with community HIV clinics ensuring health providers know what services are offered and how to refer clients to PT. Studies with other chronic disease populations including chronic heart failure and diabetes have shown that lack of interprofessional communication is a barrier to providing optimal care.[29 30] A qualitative descriptive study of health care professionals after introducing an initiative to increase interprofessional communication among professionals working with patients with heart failure found professionals felt they had greater knowledge of heart failure, and patients had improved clinical outcomes.[31] While the importance of interprofessional communication within an outpatient service is evident, further research is needed to address how to optimize communication along the health care continuum, particularly with episodic illness where the continuum may not always be predictable, nor linear in nature.

Participants in this study noted the importance of making connections with non-HIV specific intervention locales such as community-based PT and fitness centres in order to facilitate a referral if clients prefer to seek treatment in a non HIV-specific setting. In a study examining factors to consider when developing a community-based exercise program for people with HIV, participants had preferences for avoiding an HIV specific program. Some felt people with HIV were similar to the general population and could attend any program while others stated attending an HIV program meant exposing themselves to the potential stigma associated with HIV disclosure.[32] A qualitative synthesis highlighted experiences of stigma within an HIV care setting, including segregation of people with HIV, behaviours of health care professionals related to fears of exposure, and perceived judgement from practitioners.[33] Fear of stigma attending an

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HIV outpatient clinical setting was evident among some participants in our study who expressed preferences for an HIV-specific program due to beliefs that health providers would better understand and be able to address their needs. Participants echoed benefits of social support, such as group PT sessions and showed a desire to mitigate stigma by involving PT students in an HIV-specific outpatient service. While our study provides some insight, further research and initiatives are necessary to determine how to provide accessible health care for those experiencing HIV-related stigma.

Participants in this study were living with a median of six concurrent health conditions with 55% reporting mental health concerns. Participants commented on challenges accessing health care services for those who are living with HIV and actively using substances. These principles are reflective of specific considerations related to sensitive practice when implementing PT assessment and treatment sessions into an outpatient model of care. Interprofessional online modules demonstrated utility for increasing education and awareness of rehabilitation for people living with HIV among community organizations, people with HIV, as well as current and future health care professionals.[21 34 35]

Limited evidence exists concerning integration of PT in outpatient interprofessional models of care for populations with chronic health conditions. While care models are being developed to better meet the health care needs of populations living with chronic conditions, specifically in underserviced areas,[36 37] few involve PT. There is an opportunity for the HIV and rehabilitation sector to learn from evidence supporting the importance of an interprofessional health care model in other chronic illnesses including chronic obstructive pulmonary disease[38] and fibromyalgia,[39] and in older adults living with multimorbidity.[40] For example, fibromyalgia and clinics for older adults included a physical therapist, specifically as a consultant for education regarding fatigue, pain and work[39] or falls prevention.[40] While participants in our study recognized a role for PT in education, they also recommended seeing the physical therapist regularly to receive feedback and progress and promote confidence in mobility. As many people living with chronic health conditions such as chronic obstructive pulmonary disease,[41] diabetes,[42] and osteoporosis[43] benefit from PT interventions, it will be valuable to consider recommendations from this study in combination with other chronic condition models of care.

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In this study, we used a newly emerging day health program in Toronto, Canada as an exemplar to establish recommendations for integrating PT into an interprofessional outpatient model of care. We interviewed a variety of health care professionals from Canada and the UK to gain a broad range of perspectives. Although few health professionals had experience with community-based HIV care, all had years of experience working in HIV patient care and as such were capable of speaking to the potential role of PT. Our aim was not to achieve saturation, but rather to obtain a rich description of perspectives related to HIV PT care. Nevertheless we ceased data collection with 25 participants, which we observed as the point when no new categories emerged. As the recruitment for people living with HIV was done through an HIV-specialty hospital in Toronto, our study population consisted of adults living with a median of six comorbid conditions in addition to HIV and many who had accessed PT in the past year. Results may not represent those living in rural areas or low to middle income countries who may have distinct barriers to health care resources. Further research is necessary to investigate the potential for cost-saving, client-centred interprofessional models of care which may be relevant in various health systems and settings.

CONCLUSION

Multiple factors exist for consideration when implementing PT in an interprofessional outpatient model of HIV care. Results provide insight into approaches for integrating timely and appropriate access to evidence-informed rehabilitation for people living with chronic and episodic illness, such as HIV.

AUTHORS`CONTRIBUTIONS

KKO (PhD) and SCC (PhD) designed the study and provided guidance throughout the research process. KKO and SCC possesses expertise in qualitative methodology and HIV and exercise research. KKO and SCC supervised HDB, SC, MA, EL and AP (MScPT students) who developed the protocol, collected and analysed the data, and drafted the manuscript in partial fulfillment of requirements for an MScPT degree at the University of Toronto. HDB, SC, MA, EL and AP (MScPT students) developed skills in qualitative research methodology including

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attending lectures; completing readings on qualitative research study design; understanding steps of recruitment, data collection and analysis; completing a literature review; developing the research protocol, interview guides, focus group guide and demographic questionnaire; and considering the ethical issues associated with this research. All steps were closely reviewed and guided by KKO and SCC (advisors). All authors read and approved the final manuscript.

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COMPETING INTERESTS

The authors have no competing interests to declare.

ETHICS APPROVAL

University of Toronto HIV/AIDS Research Ethics Board.

DATA SHARING STATEMENT

The data collected and analyzed during the study are not publicly available in accordance with our study protocol that was approved by the University of Toronto HIV/AIDS Research Ethics Board. Data may be available on reasonable request by contacting the corresponding author.

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COREQ Checklist
Recommendations for Integrating Physical Therapy into an Interprofessional Outpatient Model of Care for People Living with HIV: A Qualitative Study

Domain 1: Research team and reflexivity			**Comment**
Personal Characteristics			
1.	Interviewer/facilitator	Which author(s) conducted the interview?	See Methods (Page 6)
2.	Credentials	What were the researcher's credentials? *E.g. PhD, MD*	Credentials are included in the Author's Contributions section (Page 27)
3.	Occupation	What was their occupation at the time of the study?	See Affiliations of the author team (Page 1)
4.	Gender	Was the researcher male or female?	See Authors Contributions (Page 27)
5.	Experience and training	What experience or training did the researchers have?	See Author's contributions (Page 27)
Relationship with participants			
6.	Relationship established	Was a relationship established prior to study commencement?	Relationship was not established prior to the interviews (see Methods - Page 5-6).
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? *E.g. personal goals, reason for doing the research*	Participants knew that the research team was comprised of a group of MScPT students at the University of Toronto who were advised by faculty at the Department of Physical Therapy. (see Methods – Page 5-6).
8.	Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? *E.g. bias, assumptions, reasons and interests in the research topic*	Participants knew that this research was done by students in partial fulfillment of the requirements for a MScPT degree at the UofT (see Methods Page 5-6 and Authors` Contributions Page 27).
Domain 2: Study design			
Theoretical framework			
9.	Methodological orientation and theory	What methodological orientation was stated to underpin the study? *E.g.*	We conducted a descriptive qualitative study (See the first sentence in the Methods –

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COREQ Checklist
Recommendations for Integrating Physical Therapy into an Interprofessional Outpatient Model of Care for People Living with HIV: A Qualitative Study

		grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Page 5)
Participant selection			
10.	Sampling	How were participants selected? *E.g. purposive, convenience, consecutive, snowball*	See Page 5-6 (Methods)
11.	Method of approach	How were participants approached? *E.g. face-to-face, telephone, mail, email*	See Page 5 (Methods)
12.	Sample size	How many participants were in the study?	25 participants. See the first sentence in the results (Page 7)
13.	Non-participation	How many people refused to participate or dropped out? Reasons?	Of the 12 Health care providers who were approached, and met inclusion criteria, 12 agreed to participate. Of the 14 people living with HIV who were approached and met inclusion criteria, 13 agreed to participate. No participants withdrew from an interview or focus group (see Results – Page 7).
Setting			
14.	Setting of data collection	Where was the data collected? *E.g. home, clinic, workplace*	Specialty hospital in Toronto (Casey House), or at location of choice of health care providers, or via Skype. See Methods (Page 6)
15.	Presence of non-participants	Was anyone else present besides the participants and researchers?	For interviews (2 members of the research team (1 interviewer; 1 field note taker). For focus groups (3 members of the research team (1 facilitator; 2 field note takers) See Methods (Page 6)
16.	Description of sample	What are the important	See Table 1 (Page 8) and

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COREQ Checklist
Recommendations for Integrating Physical Therapy into an Interprofessional Outpatient Model of Care for People Living with HIV: A Qualitative Study

		characteristics of the sample? *E.g. demographic data, date*	Results (Page 8)
Data collection			
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	See Methods (Page 6)
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?	No (Page 6)
19.	Audio/visual recordings	Did the research use audio or visual recording to collect the data?	Each interview was audio recorded. See Methods (Page 6)
20.	Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were taken throughout the interview. See Methods (Page 6)
21.	Duration	What was the duration of the interviews or focus group?	Approximately 30-90 minutes. See Results (Page 7)
22.	Data saturation	Was data saturation discussed?	Yes. We ceased the interviews at 12 and focus groups at 2 (with 13 participants); which was the point when no new categories emerged. See Discussion (Page 26)
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No (Page 6-7)
Domain 3: analysis and findings			
Data analysis			
24.	Number of data coders	How many data coders coded the data?	See Data Analysis (Page 7)
25.	Description of coding tree	Did authors provide a description of the coding tree?	See Data Analysis (Page 7)
26.	Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived from the data. See Data Analysis (Page 7)

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COREQ Checklist
Recommendations for Integrating Physical Therapy into an Interprofessional Outpatient Model of Care for People Living with HIV: A Qualitative Study

27.	Software	What software, if applicable, was used to manage the data?	NVivo 10© qualitative software (Page 7)
28.	Participant checking	Did participants provide feedback on the findings?	No. We are in the process of translating the findings back to the community (presentations, etc). (Page 7)
Reporting			
29.	Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? *E.g. participation number*	See Results (Pages 10-23)
30.	Data and findings consistent	Was there consistency between the data presented and the findings?	Yes (Page 10-23)
31.	Clarity of major themes	Were major themes clearly presented in the findings?	Yes. See Results (Page 10-23)
32	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes. See Results (Page 10-23)

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Recommendations for Integrating Physiotherapy into an Interprofessional Outpatient Care Setting for People Living with HIV: A Qualitative Study

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Recommendations for Integrating Physiotherapy into an Interprofessional Outpatient Care Setting for People Living with HIV: A Qualitative Study

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ABSTRACT

Objectives: To identify factors to consider when integrating physiotherapy (PT) into an interprofessional outpatient HIV care setting from the perspective of health care professionals and adults living with HIV.

Design: We conducted a qualitative descriptive study using semi-structured interviews (health care professionals) and focus groups (adults living with HIV). We asked participants their perspectives on barriers, facilitators and strategies to accessing and participating in outpatient PT, important characteristics physiotherapists should possess working in outpatient HIV care, content and structure of PT delivery, and program evaluation.

Recruitment and Setting: We purposively sampled health care professionals based on their experiences working in interprofessional HIV care and recruited adults with HIV via word of mouth and in collaboration with an HIV-specialty hospital in Toronto, Canada. Interviews were conducted via Skype or in-person and focus groups were conducted in-person at the HIV-specialty hospital.

Participants: 12 health care professionals with a median of 12 years experience in HIV care, and 13 adults living with HIV (11 men and 2 women) with a median age of 50 years and living with a median of 6 concurrent health conditions in addition to HIV.

Results: Overall impressions of PT in outpatient HIV care and factors to consider when implementing PT into an interprofessional care setting include: promoting the role of, and evidence for incorporating PT into outpatient HIV care, structuring PT delivery to accommodate the unique needs and priorities of adults living with HIV, working collaboratively with a physiotherapist on the health care team, and evaluating rehabilitation as a component of interprofessional care.

Conclusions: Multiple factors exist for consideration when implementing PT into an interprofessional outpatient HIV care setting. Results provide insight for integrating timely and

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appropriate access to evidence-informed rehabilitation for people living with chronic and episodic illness, such as HIV.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- To our knowledge, this is the first study to explore the role of and factors to consider when implementing physiotherapy into an interprofessional outpatient HIV care setting.
- Exploring perspectives from adults living with HIV and health care professionals using multiple methods of data collection (focus groups and interviews) enabled us to gather perspectives and recommendations from a diverse stakeholder group involved in accessing and delivering HIV care to develop recommendations for integrating physiotherapy into an interprofessional outpatient HIV care setting.
- Health care providers and those involved in program development can use results from this study when developing or adapting interprofessional outpatient programs for adults living with HIV and multimorbidity.
- This study was conducted in collaboration with a specialty HIV hospital in an urban Canadian city and therefore, results may not be transferable to low-to-middle income countries or rural or remote areas.
- This study specifically focuses on an interprofessional outpatient program for adults living with HIV; further study is necessary to determine the relevance of results to similar populations, such as those living with other chronic conditions and multimorbidity.

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INTRODUCTION

Due to health care advances and improvements in combination antiretroviral therapy, people living with HIV are experiencing increased life expectancy and chronicity of aging and multimorbidity.[1-3] Authors of a cross-sectional population-based study in Ontario reported that adults living with HIV experienced increased prevalence of mental and physical medical conditions, and multimorbidity, defined as the presence of several chronic conditions compared to the general population.[4] Many individuals experience disability associated with HIV and multimorbidity, defined as fluctuations in health, including physical, cognitive, mental or emotional symptoms and impairments, difficulties carrying out day-to-day activities, challenges related to social inclusion and uncertainty about future health.[5] Rehabilitation, including physiotherapy (PT), has a role in managing and minimizing the spectrum of disability experienced by people living with HIV.[6] Evidence suggests that PT can help to improve functional mobility,[7] pain management,[8] peripheral neuropathy[9] and address impairments associated with aging among older adults living with HIV and complex comorbidities.[10,11] Further high level evidence specifically demonstrated the benefits of exercise interventions among adults living with HIV.[12 13]

Despite evidence supporting the role and benefits, few people with HIV access PT services.[14] Barriers to accessing PT among adults living with HIV include lack of available services, stigma, financial barriers, and lack of knowledge among health care professionals about the role of rehabilitation in HIV care.[15] As HIV transitions from a palliative to chronic illness, novel approaches to PT care delivery may help to overcome barriers accessing PT for people living with complex chronic illness. Authors of a South African study advocated for home- and community-based PT in order to address financial barriers and mobility limitations.[16] Casey House, an HIV specialty hospital in Toronto, opened a publically-funded day health program in 2017 with the goal of improving access and coordination of interprofessional health services for people living with HIV.[17] To our knowledge, this is the first to include PT services and offers a foundation for considering rehabilitation as part of an interprofessional team approach in an outpatient HIV care setting. Despite emerging outpatient PT focused programming and services for people living with HIV, to our knowledge no criterion or recommendations exist to guide or

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considerations for implementing PT as an interprofessional element of outpatient HIV care settings.

Authors of a qualitative study described the role of PT in addressing physical, psychological and social aspects of health from the perspective of people living with HIV and health professionals with experience in HIV care. Results highlighted the role of PT as multidimensional and client-centered and identified eight contextual factors important to consider in interprofessional HIV care that included: aging, episodic nature of HIV, multimorbidity, competing priorities, continuity of care, stigma, resource security and social isolation.[18] These factors, while complex are important to consider as evidence to inform how to best integrate PT within an interprofessional outpatient HIV care setting. Interprofessional care is well established as a valuable component of coordinated, comprehensive HIV care.[19-21] However, specific recommendations for how to integrate PT into an interprofessional outpatient HIV program are currently lacking. Hence, the purpose of this study was to identify factors to consider in the integration of physiotherapy (PT) into an interprofessional outpatient HIV care setting from the perspective of health care professionals and people living with HIV.

METHODS

Study design

We conducted a qualitative descriptive study comprised of interviews with health care professionals, and focus groups with adults living with HIV.[22] The study protocol was approved by the University of Toronto HIV/AIDS Research Ethics Board (Protocol Reference #33760). In this study, we used the day health program at Casey House, a community-based HIV specialty hospital in Toronto, Ontario, as an exemplar to focus on factors to consider when integrating PT into an interprofessional outpatient setting for adults living with HIV.[17 18] Casey House provides a continuum of interdisciplinary health care services including inpatient and outpatient (day health program) care and community outreach services for people living with HIV and complex multimorbidity. Services may include but are not limited to, medicine, nursing, social work, mental health and substance use services, recreation therapy, massage therapy, and most recently, physiotherapy making this an ideal setting in which to examine the integration of PT into an interprofessional outpatient care setting.[23]

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Patient and Public Involvement

This research evolved from a longstanding community-academic-clinical partnership among people living with HIV, clinicians and researchers who identified key research priorities in HIV and rehabilitation. This study addresses key research priorities established by the *Canada-International HIV and Rehabilitation Research Collaborative (CIHRRC),* a network of over 90 people living with HIV, researchers, clinicians, representatives from community organizations and policy stakeholders who collectively work to advance and translate HIV and rehabilitation research.[24] CIHRRC conducted a multi-stakeholder consultation with researchers, PLWH, clinicians and community partners to establish a *Framework of Research Priorities in HIV, Disability and Rehabilitation*.[25] This Framework describes six priorities across three content areas: 1) exploring episodic health and disability; 2) effectiveness of rehabilitation interventions and models of service delivery; and 3) advancing patient-reported outcome measures in HIV rehabilitation.[25] This research specifically addresses priority #2 examining models of rehabilitation service delivery in the context of HIV.

We consulted with a community member living with HIV who advised on the development of the data collection tools. Results from this study were translated in the form of a presentation with Casey House staff, and a fact sheet summary summarizing the role of PT in HIV care and providing practical information of how to access PT. The fact sheet was emailed to study participants and more broadly disseminated via an openly accessible link on the CIHRRC website (http://cihrrc.hivandrehab.ca/docs/Fact-Sheet-Where-How-PT-Fits-DHP-FINAL--Nov-15-17.pdf).[18] Results from this study informed the integration of PT into the interprofessional outpatient care setting (Casey House day health program) which serves as a foundation for a community-engaged evaluation of the process and outcomes of rehabilitation for people living with HIV and complex multimorbidity.[23]

Recruitment

Health Care Professionals: We recruited health care professionals who self-identified as experts in HIV care using purposive sampling, whereby authors (KKO, SCC) identified known professionals working in the field. Health care professionals were defined as health providers

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who are registered or voluntarily designated by a governing body. To ensure we obtained perspectives from a variety of rehabilitation professionals with expertise in interprofessional HIV care across hospital and community settings, we purposively sampled and recruited rehabilitation professionals from Canada and the United Kingdom (UK) via the *Canada-International HIV and Rehabilitation Research Collaborative (CIHRRC).*[24]

People Living with HIV: We recruited adults 18 years or older who self-identified as living with HIV via posters and word of mouth by Casey House clients and staff. Members of the research team identified themselves to potential participants as students in the Department of Physical Therapy at the University of Toronto who were advised by advisors throughout the research (KKO and SCC). A member of the research team obtained written or verbal informed consent from each participant immediately prior to each interview or focus group.

Data Collection

We developed semi-structured interview (health care professionals) and focus group (adults living with HIV) guides to explore considerations when integrating PT into interprofessional outpatient HIV care for adults, using the Casey House day health program as an exemplar. A community member living with HIV with research expertise provided feedback on drafts of the interview and focus group discussion guides. Guiding questions were devised to explore perspectives in the following areas: strategies of how to enable access to an outpatient PT program for people living with HIV, barriers and facilitators to adults living with HIV participating in an outpatient PT program, characteristics of physiotherapists that are important for working in outpatient HIV care, recommendations for content and structure of PT sessions in order to accommodate the unique needs and priorities of people living with HIV, and how to evaluate the PT program in the context of an outpatient, interprofessional HIV care setting. We met as a research team throughout data collection to discuss overall impressions of the interviews and focus groups. We revised the interview guide five times and the focus group guide once during the course of data collection. We adapted the guides to improve clarity of the questions and expand on specifics related to evolving codes. This ongoing refinement helped to maximize our ability to elicit participant responses in subsequent interviews and focus groups in order to comprehensively describe factors for consideration when integrating PT in HIV care.[18]

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We conducted and audio-recorded 12 face-to-face or Skype interviews with health care professionals and two focus groups at Casey House with adults living with HIV. Two research team members were present for each interview, and three were present for each focus group. One team member facilitated the interview (MA, SC, HD, AP) or focus group (MA) and others assisted with obtaining consent and documenting field notes (MA, SC, HD, EL, AP). We collected data either verbally post interview (health care professionals) or via a self-administered questionnaire (adults living with HIV) to understand participant demographics, disease characteristics and experiences working in HIV care (health care professionals) and experiences with PT (adults living with HIV). Interview and focus group audio recordings were transcribed verbatim and reviewed for accuracy. Further details on our methodology are published in a manuscript that describes the role of physiotherapy from the perspectives of adults living with HIV and healthcare professionals working in HIV care.[18]

Data Analysis

We initially read the transcripts independently and noted context and first impressions.[26] We then used a conventional content analytical approach to code transcripts.[27] Data were organized using NVivo V10 software.[28] All members of the team independently read and coded five of the same transcripts (three interviews and two focus groups), and met seven times to discuss overall impressions, coding, and adaptations to guides for subsequent data collection. We developed a draft coding scheme based on the first four team-coded transcripts (two interviews and two focus groups) and ensured coding consistency with an additional team-coded interview. Pairs of two team members (HDB, MA,SC, EL, AP) independently coded the remaining transcripts and met to discuss coding and resolve discrepancies.[18] We identified common responses and terms in transcripts, and then grouped related codes into themes to highlight recommendations for integrating PT into an interprofessional outpatient HIV care setting. We defined each theme as it related to our study objective and organized the themes to clearly describe participant views and perspectives.[29] We analyzed categorical demographic variables using frequencies and percentages and continuous demographic variables using interquartile ranges (IQR).

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RESULTS

Twenty-five individuals participated in an interview (12 health care professionals) or a focus group (13 adults living with HIV) between January and May 2017. Nine health care professionals practiced in Canada and three practiced in the UK. Half were rehabilitation professionals (3 occupational therapists and 3 physiotherapists) and the others included a nurse, pharmacist, recreation therapist, social worker, physician and massage therapist. All three participants from the UK were rehabilitation professionals. Five health care professionals worked in a specialty hospital, five in a hospital and two in a community health centre or health clinic. The health care professionals reported a median of 12 (IQR 8,16) years of experience working with people living with HIV and a median of 9 years (IQR 4, 12) working in a community setting, defined as care provided to people living with HIV outside of a hospital. Table 1 summarizes the characteristics of the focus group participants living with HIV. The majority of adults living with HIV were men and self-reported living with a median of six (IQR 3, 13) concurrent health conditions in addition to HIV. Approximately one third (four) of participants living with HIV had no access to provincial social assistance or extended health benefits. Nine were current clients of Casey House and ten reported interest in attending a day health program for people living with HIV.

Table 1. Participant Characteristics: Adults living with HIV[a]

Characteristic	Number of participants (%)
Gender	
Man	11 (85%)
Woman	2 (15%)
Median Age (years) (IQR) (n=11 responses)	50 (47, 55)
Current marital status (n=10 responses)	
Single	8 (80%)
Widowed	2 (20%)
Currently working or volunteering (n=11 responses)	3 (27%)

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Self-reported health (n=11 responses)	
Excellent	2 (18%)
Good	2 (18%)
Fair	5 (45%)
Poor	1 (9%)
Average gross yearly income before tax (n=10 responses)	
Less than $10,000 CAD	1 (10%)
$10,000 to less than $20,000 CAD	3 (30%)
$20,000 to less than $30,000 CAD	5 (50%)
$40,000 to less than $50,000 CAD	0 (0%)
$60,000 to less than $70,000 CAD	1 (1-%)
Extended medical benefits coverage status (n=11 responses)	
No medical insurance benefits other than provincial health care	4 (36%)
Benefits through a provincial social assistance plan	3 (27%)
Extended medical insurance coverage through work	1 (9%)
Other[b]	3 (27%)
Year of HIV diagnosis, median (IQR) (n=11 responses)	1997 (1995, 2002)
Currently taking HIV antiretroviral therapy (n=11 responses)	9 (69%)
Viral load undetectable (<50 copies/mL) (n=11 responses)	7 (64%)
Number of self-reported concurrent health conditions in addition to HIV, median, (IQR) (n=11 responses)	6 (3, 13)
Commonly self-reported concurrent health conditions[cd] (n=11 responses)	
Muscle pain	7 (64%)
Dental problems	6 (55%)
HIV wasting syndrome	6 (55%)
Joint pain	6 (55%)
Mental health condition	6 (55%)
Experience with Physiotherapy (n=11 responses)	

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Currently seeing a physiotherapist	3 (27%)
Saw a physiotherapist in the past year	6 (54%)
Never saw a physiotherapist	2 (18%)
Commonly reported reasons for seeing physiotherapist[cd] (n=11 responses)	
To address HIV and side effects of treatment	8 (73%)
To address issues related to other health conditions	7 (64%)
To address physical health challenges	6 (55%)
To address challenges carrying out day-to-day activities	6 (55%)
To help get back to leisure or recreational activities	5 (45%)

Legend: IQR: interquartile range; CAD: Canadian dollars;
[a] 11 of 13 adults living with HIV completed the demographic questionnaire;
[b] other funding included status card (government ID card for which some Indigenous peoples are eligible, and which provides some extended health coverage) and unspecified;
[c] reported by ≥5 participants;
[d] participants were asked to check all concurrent health conditions they were living with in addition to HIV.

We present overall impressions of PT in outpatient HIV care, followed by factors to consider when implementing PT in an interprofessional care setting using the following themes: promoting the role of, and evidence for PT as part of outpatient HIV care; structuring the PT mode of delivery to accommodate the unique needs and priorities of people living with HIV; working collaboratively with a physiotherapist on the health care team; and evaluating rehabilitation as a component of an interprofessional HIV care. We integrated perspectives of both health care professionals with expertise in HIV care and people living with HIV to best represent recommendations for implementing PT as part of interprofessional outpatient HIV care. Given the diversity of professions represented in our sample, to maintain participant anonymity we refer to health care professionals as either 'rehabilitation professionals' (physiotherapist or occupational therapist) or 'other health care professionals' (social worker, recreational therapist, pharmacist, physician, registered nurse and massage therapy) in order to maintain participant anonymity.

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Impressions of Physiotherapy in Outpatient HIV Care

Participants living with HIV expressed perceived benefits of having access to PT in an outpatient, interprofessional care setting:

> *"When I walk, I'm not quite as strong as I used to be. I need to be careful when I walk. Physiotherapy, I think, will open up a whole new avenue for me and give me more confidence and actually, walking from A to B."* - *Person living with HIV - P7 (man)*

Another participant described how having quick access to publically-funded PT may be beneficial to those experiencing acute challenges related to self-care, housing or mobility:

> *"I think that might be a good idea, rapid access, someone coming in off the street who is HIV positive having a hard time walking, or, you know, not quite taking care of themselves, that can see someone fairly quickly, talk to them and maybe, you know, get some kind of physiotherapy." – Person Living with HIV – P1 (man)*

> *"Another effective use of time clinically… could be that … we're going out to the homeless and we're giving them [clients living with HIV] mobility aids and then you could get them in [to PT] because then they know it's [the physiotherapy program] free and they can access something." – Rehabilitation professional – P10 (United Kingdom)*

One participant spoke about his challenges accessing PT in the past, attributed to having to pay out of pocket for services. He described how universal access to PT as part of a publically funded, outpatient day health program could facilitate access to rehabilitation for more complex and marginalized populations with limited income and financial insecurity:

> *"I just didn't follow it [physiotherapy] through because of the problem with paying and getting reimbursed. But if there was something like the day program and I could have accessed one appointment every 2 or 3 weeks I would have probably tended to the problem [Baker's cyst in the knee]. The way it was I didn't do anything about it." – Person living with HIV - P6 (man)*

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Health care professionals described how an outpatient interprofessional approach to care offered the potential to "*pull in those people who are reluctant to engage elsewhere*" and "*fill a big gap in the clinical and psychosocial care of our patients*". One rehabilitation professional discussed the value of a specialized outpatient form of care in this population:

> *"Why can't they [people living with HIV] access a musculoskeletal outpatient service or neuro outpatient service or general sort of physio clinics?... for some people living with HIV, where their disease is well controlled, they're not having social problems, mental health problems, that may well be true… but there's a fairly big proportion of people, or certainly a reasonable community of people living with HIV who have complex care morbidities and I think it's those people that really need... special services." - Rehabilitation professional - P11 (United Kingdom)*

Health care professionals suggested that an interprofessional approach to care in the outpatient setting has potential to address gaps in the health care system by incorporating programs and services, such as PT that are non-existent or are inaccessible to people living with HIV:

> *"Because once you're out the door in our health care system, you're on your own. So the more guidance we give them [people living with HIV], the more education, the better. With our patients, a lot of issues come up because of their cognitive impairment, so even if they're told some things, they need constant reminders about how to take care of themselves." - Other health care professional - P3 (Canada)*

Factors to Consider when Implementing Physiotherapy in Outpatient Interprofessional HIV Care

In order to adequately address the complexity of HIV care in a practical setting, we identified four themes regarding the implementation of PT into outpatient interprofessional HIV care: 1) promoting the role of, and evidence for, PT in an outpatient HIV clinical setting; 2) structuring the PT mode of delivery to accommodate the unique needs and priorities of people living with

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HIV; 3) working collaboratively with a physiotherapist on the health care team; and 4) evaluating rehabilitation as a component of interprofessional care.

1) Promoting the Role of, and Evidence for, Physiotherapy in an Outpatient HIV Clinical Setting

Role of Physiotherapy

Participants described the role of PT within outpatient HIV clinical setting as addressing physical, psychological and social aspects of health within the context of a health promotion and rehabilitation approach to care. Many participants living with HIV viewed the role of PT as synonymous with exercise, stating that PT in an outpatient interprofessional care setting would provide an opportunity to "*get help with exercises*" and engage in "*exercise together [with peers] or go walking together*". In addition, people living with HIV suggested PT could enhance social engagement and provide a venue to build the strength and functional ability to "*actually get up and begin to return to going to a theatre*".

Health care professionals similarly referred to the role of PT within an outpatient interprofessional service in a physical context such as "*cardiorespiratory, progressive resistance training, neuromotor exercises*" and "*balance… falls prevention*", as well as psychological and social aspects including "*motivation, inspiration, structure, meaning*" while using a creative approach to "*find an activity that actually motivates someone*". Health care professionals also viewed physiotherapists as having a role in "*education*" and "*preventative health*" such as "*falls prevention*", "*secondary complications*" and "*pain*".

Promoting Physiotherapy in an Interprofessional Outpatient HIV Care Setting

Community and hospital-based health professionals noted the importance of information sharing between HIV clinics in the city and an outpatient service (day health program). They suggested that it was valuable for physiotherapists to visit clinics and to present at rounds in order to inform the health care community about the role and evidence in addressing disability and promoting healthy aging with HIV, and provide practical information about how clients can access services:

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> *"Every HIV clinic actually has some kind of rounds. A good way of promoting is to… offer just to do a rounds either what is being offered at [Name of site] or on a topic, on a physio related topic so what's new in treating or what's new in arthritis and HIV… you get to educate somebody but also are plugging the services at the same time." Other health care professional - P6 (Canada)*

Another health care professional participant, with experience working in an HIV-specific health centre, discussed using social media, specifically involving the experiences of clients to raise awareness of PT and provide practical information about what PT is, and how services available can be accessed in an outpatient clinical setting:

> *"Always use social media… have a Twitter account, have a Facebook page, have a YouTube video of what physiotherapy at [Name of site] is. Those sort of things are important because then if you've got a really engaging video that has a physiotherapist and a service user in it saying this is what physiotherapy is, this is the services we offer, this is what happens when you come and then someone giving their personal experience of attending, that will make the world of difference." Rehabilitation professional - P10 (United Kingdom)*

<u>*Staffing and Support*</u>

Participants noted the role members of the health care team play in creating a welcoming environment. Health care professionals indicated personal traits that would be useful for physiotherapists to possess in order to facilitate engagement in PT such as "*warmth*", "*adaptable*", "*non-judgemental*" and possessing "*broad knowledge [of cardiovascular, neurological and musculoskeletal physical therapy-related specialties and rehabilitation for people living with HIV and marginalized populations]*".

People living with HIV and health care professionals explained the importance of having a physiotherapist who has experience in HIV care, and understands the physical, social and psychological complexities of living with HIV.

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"I saw a physiotherapist, and … she didn't understand HIV, which is fine, …she was like, 'oh I've never seen somebody so young be so weak, I usually work with senior citizens', and just made me really feel like an alien, that it was like, 'I don't even want to work with her anymore.' And so that's why I'm kind of like, with something with [a specialty hospital] you feel like people already understand HIV, you don't feel like you have to give a lesson." - Person living with HIV - P3 (woman)

However, some participants did not feel all PT services offered to people living with HIV needed to be HIV-specific or focused in nature. Some suggested partnering with other community health and social service-focused programs, which are not HIV-specific to provide additional options for adults with HIV to address their episodic disability, not only for issues related to aging, but also disability attributed to potential multimorbidity, such mental health or chronic pain:

"I think it's important that there is available knowledge on what other services can be referred to because not everybody wants to come to a HIV specific service. Just because you're positive doesn't mean you have to engage in a positive program." - Rehabilitation professional - P10 (United Kingdom)

People living with HIV participants suggested involving PT students in an outpatient care setting such as the day health program. Integrating PT students offered a cost-effective strategy for increasing availability of PT services while promoting opportunities for increasing knowledge and awareness about HIV and reducing stigma among future health care professionals.

"It would be cheaper to have students to come as part of their program or schooling... I think it would help open up the door to, uh, people who are afraid of communicating with HIV/AIDS… There is still stigma about HIV out there. I can only imagine what it is like, going to school, thinking 'oh god, I am going to work with HIV clients, I don't want to touch them, that sort of thing. But, get rid of the fear, educate yourself. Education is key- and this would be part of education." - Person living with HIV - P1 (man)

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2) Structuring the Physiotherapy Mode of Delivery to Accommodate the Unique Needs and Priorities of People Living with HIV

Client-Oriented Environment

Participants emphasized the importance of a "*welcoming*" environment including "*bright and cheery colours*" to make it "*as much of a comfortable experience*" as possible. One health care professional noted that people with HIV may be more likely to access PT in an outpatient interprofessional setting knowing that "*they can access more than one thing that's free*" in one location. Participants suggested reminder phone calls can be beneficial in promoting attendance for outpatient service appointments amid fluctuating health, various medical appointments and scheduling:

> *"I think that [an] appointment reminder is crucial for people like us who are inundated with appointments." Person living with HIV - P6 (man)*

Group versus Individual Sessions

Both health care professionals and people with HIV expressed the benefits of group PT exercise and education sessions including peer support, motivation and cognition:

> *"Peer-engaged support, you pair people up, … we get to know each other, and you don't create dependent links that emerge as you're doing physio… pair people, encourage people, because then you forget a part of an exercise, and then my… peer remembers the rest of it." Person living with HIV - P12 (man)*

However, both stakeholder groups also acknowledged the need for individualized PT sessions, specifically for initial assessments prior to joining a group, to ensure the unique-needs of a given client are met:

> *"One-on-one is really good if the client has really specific goals around walking or safety or improving transfers… Group settings again have potential for group teaching or exercise class and also has that opportunity to bring folks together and feel like a community." Other health care professional - P5 (Canada)*

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Structured versus Flexible Approaches to Physiotherapy Care

Participants recommended that scheduled PT appointments are important, but that a PT service should be flexible in order to facilitate access to people who may experience episodic disability and other confounding barriers to attending PT:

> *"I think that having flexibility allows for options and allows for choices because living with HIV you can have one day that's great and the next is not so great because the condition is episodic in nature. So it's an episodic disability just like cancer, lupus, arthritis, MS that sort of thing. Even with in the day you can be great in the morning by 10 o'clock and then by 1 o'clock you're not feeling that great." Rehabilitation professional - P7 (Canada)*

One health care professional described the benefits of a group-based approach offering a flexible (drop-in) attendance schedule in his work setting:

> *"We now have open access, which is, we have people attend, return or restart depending on their own health and disability. So the open accessibility almost enables people to take a bit more ownership over their health and they can engage in these things a bit more. They create a little bit more autonomy about what is important for them in a supervised, safe physiotherapy led environment." Rehabilitation professional - P10 (United Kingdom)*

Client-Oriented Goals and Interventions

Participants expressed the need to engage in meaningful PT programs that are relevant and tailored to clients' goals, abilities, and preferences within the context of their day-to-day lives. One person living with HIV indicated the importance of PT to address functional goals specific to the individual in order to have a relevant and meaningful impact on daily living:

> *"It's different when you're in a controlled setting like that [clinical], as opposed to walking the street on your own, so it's sort of like a clinical versus a day to day therapy. So even things like walking the sidewalks and learning how to not trip over things or learning to go up your stairs." Person living with HIV - P5 (man)*

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One health care professional with experience working in an HIV outpatient setting emphasized the importance of an intervention-focused approach tailored specifically to clients' goals:

> *"When we're addressing what's meaningful and important to the individual that we're treating, if they engage with the process and engage with physical therapy or physiotherapy, we can achieve people's goals and we know that the majority of their goals are either body image concerns, participation in meaningful tasks, health and fitness or mobility." Rehabilitation professional - P10 (United Kingdom)*

One participant with HIV noted how participating in PT could allow individuals to feel a sense of purpose in contributing to community:

> *"...they [people living with HIV] get involved in the community and I know that there's people at this table that are working at the food bank, and the physiotherapy can give them energy and extra strength and so with the physiotherapy… you are able to give back to the community and I think that's wonderful." - Person living with HIV - P12 (man)*

In order to address clients' individual goals and unique presentations, health care professionals suggested stratifying interventions. Practically, this could involve "*different groups for people at different levels*" and a varying "*ratio*" of participants to support staff depending on factors such as "*cognitive problems*", "*comorbidities*", "*age*", and "*mood issues*". One rehabilitation professional participant noted:

> *"We need to make sure that what we're doing is... centred on the individual, so I think that everybody who you see, you should do a thorough assessment and kind of work out what their needs are." Rehabilitation professional – P12 (United Kingdom)*

One participant living with HIV described his concerns regarding a group-based intervention that was not tailored to his level of ability:

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"If I'm in a group setting and they're doing something that I find a bit difficult, I [want to be] able to go to a one on one and learn how to do it without taking away time from everyone else and learning for myself so I'm... secure enough in myself to know I can do the move without toppling over or bothering something." - Person living with HIV- P2 (man)

Promoting Independence

One participant living with HIV identified that it can be "*very hard doing physiotherapy without [a physiotherapist] in your room, because she'll come and make sure you exercise*". Another participant suggested how to overcome this challenge:

"The knee exercises you are doing in the studio or in the centre… record it for each participant so that each participant has their own disc to take home and follow-through because three days a week. Three days off, four days on. There are your instructions there." Person living with HIV - P13 (man)

Health professionals described how PT resources and materials should be adapted to maximize retention, independence and adherence to PT programs:

"I think that ensuring if you are using any print material that you are using basic language… Easy to access information. If material is in print, can our clients read it?... Understanding that people might need to have the same session 2 or 3 times to retain that session." - Other health care professional - P5 (Canada)

Sensitivity to Practice

People with HIV and health care professionals noted the importance of physiotherapists to adopt approaches that are sensitive to the complexities sometimes faced by people with HIV including the potential episodic nature of HIV, stigma, substance use challenges, and financial insecurity. One participant emphasized the importance of a "*safe space"* to address stigma with HIV.

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"I think that one of the key things is that providing physiotherapy in a safe space… which is a space which is maybe dedicated and specialized to people living with HIV… I think is incredibly important for some people. I think some people want the opportunity to know that even though they don't have to talk about HIV, if I want to talk about HIV in the context of why I'm here, I'm not going to be judged, I'm not going to be stigmatized against… I'm not going to encounter something negative. Rehabilitation professional – P10 (United Kingdom)

Participants reported stigma as a barrier to accessing PT and suggested the first step in mitigating stigma is to simply acknowledge its presence. Stigma may be related to various aspects of life, including, "*mental health*", "*homosexuality*", "*HIV status*" and may come from health professionals, family, or internalized stigma. Participants suggested offering group exercise classes tailored to individuals who may identify with a certain culture or gender while considering sensitivity to PT practice in order reduce the potential for stigma and discrimination:

"Certain cultures, men and women in the same room… partnering up and things like that… also gender… the trans community as well… so it would be engaging them as well." Person living with HIV - P6 (man)

People living with HIV and health care professionals recognized substance use, including "*alcohol*" and "*drug use*" specifically, "*cigarettes*", "*crystal meth*" and "*cocaine*", as a barrier to participation in PT:

"So we try to schedule the appointments… but sometimes they are not [compliant] because unfortunately the drug use or the alcohol, whatever they are using, the substance use is a stronger pull. I would say very often if they have true addiction issues, then it can … interfere very much." – Rehabilitation Professional – P8 (Canada)

One person with HIV suggested "*a harm reduction framework within the physiotherapy*" approach to better address needs of clients. Health care professionals noted concerns regarding the associated risk allowing clients who are using substances to participate in PT due to impaired

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balance, judgement and potentially unstable vitals: "*I certainly didn't feel safe to bring people in [to physiotherapy] who are on substances*."

3) Working Collaboratively with a Physiotherapist on the Health care Team

Team Communication

Participants recognized the importance of communication to streamline referrals and to discuss progress of clients within the team. One rehabilitation professional who works in an interprofessional setting discussed the importance of identifying appropriate referrals to PT:

> "*They [clients] need to be identified as requiring physiotherapy…what is the criteria of requiring physiotherapy…the triggers for referral, what is the threshold for referral and … the appropriate pathway to facilitate engagement and accessibility?" – Rehabilitation professional -P10 (United Kingdom)*

The health care team should be knowledgeable of the other members on the team and services available to provide client-centered care. Some health care professionals suggested regular meetings in which the team can discuss concerns and specific clients who may be attending the program that day.

> *"I think communication is the biggest thing, so if you can build tools upfront like weekly meetings or even daily meetings… focusing on specific pieces of, like clinical issues that are coming up then, you're probably going to have more success in providing patient care to people." - Other health care professional - P4 (Canada)*

Some health professionals suggested that PT may have a role in informing other health practices in regard to transfers, pain, physical impairments and mobility for clients. One health care professional who worked in an interprofessional setting described how the team can reinforce PT recommendations so that clients can be best supported, using personalized strategies and techniques in each environment:

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> *"They [physiotherapists] could inform the work that I do, and… it would probably inform what massage therapy does as well and what nursing does, it already informs what nursing does, but I think more heavily...nursing - our nurses are great at implementing the recommendations of physio." - Other health care professional - P2 (Canada)*

Interprofessional Group Sessions

Some health professionals suggested adopting interprofessional sessions involving a physiotherapist and another health professional, while others advised against it. One rehabilitation professional commented on the challenge of addressing competing priorities in a joint session:

> *"When we have more than one professional in the clinic room at the time, completely ineffectual. I did a joint clinic with a dietician, didn't work. There's too many people in the room, too many factors to consider, too many competing issues for prioritizing what's important at the time." - Rehabilitation professional - P10 (United Kingdom)*

However, another health professional commented on the potential benefits of interprofessional collaboration in a shared group program:

> *"I would love to see a collaboration between physiotherapy and recreation therapy around some sort of exercise groups in the future within the day health program. That would be something that I would- I think would be a really natural pairing and would work really well." - Other health care professional - P2 (Canada)*

Whether encouraging interprofessional group-based sessions or not, both health care professionals and adults living with HIV recognized the importance of identifying common goals to facilitate an effective and meaningful PT session.

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4) Evaluating Rehabilitation as a Component of Interprofessional Care

Many health care professionals discussed the importance of evaluation to determine the successes and challenges of implementing a new discipline such as PT in an interprofessional, outpatient HIV care setting. The episodic nature of HIV, in addition to the complex physical, psychological and social domains of health affected, requires a broad approach to program evaluation. One health professional with many years experience in HIV care reported:

> *"It's very difficult to find a uniform measurement tool to look at objective markers of success with physical therapy in a heterogeneous population such as …people with HIV. Which is the problem we face, which is why the subjective tools and… measurements are important. However, measuring success means measuring change over time and I think that when you are looking at a condition that is episodic… I think it's important that we look at a range of different things. So I think there needs to be a battery approach." - Rehabilitation professional - P10 (United Kingdom)*

Most health care professionals suggested implementing a variety of evaluation methods, focused on client goals to capture subjective and objective components of evaluation.

> *"I think all evaluation needs to consider what the patient goals are, so to be less weighted around program goals and maybe being more focused around patient goals that might be one way to consider the evaluation." - Other health care professional - P4 (Canada)*

One participant with HIV suggested evaluating PT as a component of an interprofessional HIV care that should involve "*weekly or monthly check-ins… just a couple of simple questions*" for people with HIV to answer. Another suggested:

> *"Once you start getting clients, like the ones that are seeing the physiotherapist, ask them how its working and how they think it is going so you guys could know how everybody is doing with it." – Person living with HIV - P4 (woman)*

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Overall, participants recognized the importance of focusing on the clients' goals and perspectives to effectively and rigorously evaluate rehabilitation (and specifically PT) as a component of interprofessional HIV care.

DISCUSSION

To our knowledge this is the first study to explore factors to consider when implementing PT into an outpatient interprofessional HIV care setting. The role of PT in HIV care is multidimensional and client-centered. Our results recommend a goal oriented and client-centred PT approach to care. Our findings align with recommendations outlined in a conceptual framework of rehabilitation for people living with HIV[6] and highlight the need for rehabilitation in outpatient settings to address prevention and healthy aging concerns such as mobility and social engagement for people with HIV.

Our results indicate the importance of evaluation PT as an interprofessional approach to outpatient HIV care. In the evaluation of a physiotherapist led group outpatient rehabilitation program for people living with HIV in the UK, individualized goal-setting was beneficial, as 83% of participants achieved or surpassed their goals.[11] Client-centered HIV care should allow for flexibility to accommodate the potential episodic nature of HIV. Participants outlined barriers to accessing and engaging in PT, which stemmed from the chaotic lifestyle some people with HIV experience related to substance use, stigma, financial security, and basic needs (housing and food) in addition to the episodic nature of HIV. Brown and colleagues minimized these barriers by designing a program where participants were not required to attend weekly, but free to attend and restart as able.[11] Collectively our findings highlight the evolving role of rehabilitation beyond tertiary care to that of primary and preventative care as a mechanism for health promotion, prevention of multimorbidity, and healthy aging with HIV.

Results from our study highlight the importance of a physiotherapist working in an outpatient setting to maintain communication with community HIV clinics ensuring health providers know what services are offered and how to refer clients to PT. Chetty and Hanass-Hancock (2016) conceptualized a rehabilitation model of care for people living with HIV in South Africa.[30] Authors highlighted the importance of communication among multidisciplinary team members

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and between hospital and community settings in order to optimize rehabilitation and the need for physiotherapists provide ongoing education with team members and clients regarding the role and importance of PT.[30] Studies with other chronic disease populations including chronic heart failure and diabetes have shown that lack of interprofessional communication is a barrier to providing optimal care.[31 32] Authors of a qualitative descriptive study explored the impact of introducing an initiative to increase interprofessional communication among health care professionals working with patients with heart failure. After introducing strategies to enhance communication, professionals felt they had greater knowledge of heart failure, and felt patients had improved clinical outcomes.[33] While the importance of interprofessional communication within an outpatient service is evident, further research is needed to address how to optimize communication along the health care continuum, particularly with episodic illness where the continuum may not always be predictable, nor linear in nature.

With HIV having transitioned from progressively terminal to a chronic and episodic illness, the rehabilitation needs of people now aging with HIV are not only increasing, but also shifting from the traditional inpatient (hospital) setting to the outpatient (day health program or community) setting. However, few people with HIV are accessing formalized PT services citing barriers related to financial constraints, physical barriers, and lack of knowledge and awareness among members of the health care team about the role for rehabilitation.[30 34]

Participants in this study noted the importance of physiotherapists to connect with non-HIV specific intervention locales such as community-based PT and fitness centres in order to facilitate referrals if clients prefer to seek treatment in a non HIV-specific setting. In a study examining factors to consider when developing a community-based exercise program for people with HIV, some participants with HIV preferred to attend a program which was not HIV specific. Some felt people with HIV had similar physiotherapy priorities as the general population and could attend any program while others stated attending an HIV program meant exposing themselves to the potential stigma associated with HIV disclosure.[35] A qualitative synthesis highlighted experiences of stigma within an HIV care setting, including segregation of people with HIV, behaviours of health care professionals related to fears of exposure, and perceived judgement from practitioners.[36] Fear of stigma attending a general outpatient clinical

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setting was evident among some participants in our study who expressed preferences for an HIV-specific program due to beliefs that health providers would better understand and be able to address their needs. Participants echoed benefits of social support, such as group PT sessions and showed potential benefits of mitigating stigma by involving PT students in an HIV-specific outpatient service. Education on the role and evidence of physiotherapy in HIV care is critical for enhancing awareness among current and emerging health professionals about PT[37] and can help to mitigate stigma. While our study provides some insight, further research is necessary to determine how best to provide accessible care for those experiencing HIV-related stigma.

Participants in this study were living with a median of six concurrent health conditions with the majority reporting mental health concerns. Participants commented on challenges accessing health care services for those who are living with HIV and actively using drugs and alcohol. These principles are reflective of specific considerations related to sensitive practice when implementing PT assessment and treatment sessions into an outpatient care setting. Interprofessional online modules which address some of these topics, demonstrated utility for increasing education and awareness of rehabilitation for people living with HIV among community organizations, people with HIV, as well as current and future health care professionals.[20 38 39]

Limited evidence exists concerning integration of PT into interprofessional outpatient care settings for populations with chronic health conditions. While models of care were developed to better meet the health care needs of populations living with chronic conditions, specifically in underserviced areas,[40 41] few involve PT and few are specific to HIV care. Chetty and colleagues (2016) developed a rehabilitation model of care for people living with HIV in South Africa.[30 42] Authors concluded the need for a patient-centred and multidisciplinary approach to care, similarly reported by participants in our study. Guiding principles for a rehabilitation model of care included effective communication, leadership, collaboration, and education of providers in order to successfully implement a model of care across home and community-based care settings.[30] There is an opportunity for the HIV and rehabilitation sector to learn and apply evidence from other illnesses such as chronic obstructive pulmonary disease[43] and fibromyalgia,[44] and in older adults living with multimorbidity,[45] as well as applying principles

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from models of HIV rehabilitation established in other contexts such as low to middle income countries.[30 42] As more people age with HIV in combination with other chronic conditions, it will be important to draw from evidence on the effect of PT interventions from other chronic conditions such as chronic obstructive pulmonary disease,[46] diabetes,[47] and osteoporosis[48], and apply it to the context of people with HIV in the outpatient care setting.

In this study, we used a newly emerging day health program in Toronto, Canada as an exemplar to establish recommendations for integrating PT into an interprofessional outpatient HIV care setting. We interviewed a variety of health care professionals from Canada and the UK to gain a broad range of perspectives. Although few health professionals had experience with community-based HIV care, all had experience working in HIV patient care and as such were capable of speaking to the potential role of PT. Our aim was not to achieve saturation, but rather to obtain a rich description of perspectives related to HIV PT care. Nevertheless we ceased data collection with 25 participants, which we observed as the point when no new categories emerged. As the recruitment for people living with HIV was done through an HIV-specialty hospital in Toronto, our study population consisted of adults living with a median of six comorbid conditions in addition to HIV and many who had accessed PT in the past year. Results may not represent those living in rural areas or low to middle income countries who may have distinct barriers to health care resources. Nevertheless, the considerations from our study related to the importance of client-centred, goal-oriented and interprofessional care is analogous to the guiding principles of a rehabilitation model of care for people living with HIV in South Africa.[30] Further research is necessary to investigate the potential for cost-saving, client-centred interprofessional approaches to care which may be relevant across different health systems and settings.

CONCLUSION

Factors for consideration when implementing PT into an interprofessional outpatient HIV care setting include: promoting the role of, and evidence for involving PT in an outpatient model of care, structuring PT delivery to accommodate the unique needs and priorities of people living with HIV, working collaboratively with a physiotherapist on the health care team and evaluating rehabilitation as a component of interprofessional care. Results may be used by people living with HIV, clinicians (health and rehabilitation professionals), administrators and policy

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stakeholders to inform the planning and integration of timely and appropriate access to evidence-informed rehabilitation into interprofessional care for people living with chronic illness, such as HIV.

AUTHORS`CONTRIBUTIONS

KKO (PhD) and SCC (PhD) designed the study and provided guidance throughout the research process. KKO and SCC possess expertise in qualitative methodology and HIV and exercise research. KKO and SCC supervised HDB, SC, MA, EL and AP (MScPT students) who developed the protocol, collected and analyzed the data, and drafted the manuscript in partial fulfillment of requirements for an MScPT degree at the University of Toronto. HDB, SC, MA, EL and AP (MScPT students) developed skills in qualitative research methodology including attending lectures; completing readings on qualitative research study design; understanding steps of recruitment, data collection and analysis; completing a literature review; developing the research protocol, interview guides, focus group guide and demographic questionnaire; and considering the ethical issues associated with this research. All steps were closely reviewed and guided by KKO and SCC (advisors). All authors read and approved the final manuscript.

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COMPETING INTERESTS

The authors have no competing interests to declare.

ETHICS APPROVAL

University of Toronto HIV/AIDS Research Ethics Board.

DATA SHARING STATEMENT

The data collected and analyzed during the study are not publicly available in accordance with our study protocol that was approved by the University of Toronto HIV/AIDS Research Ethics Board. Data may be available on reasonable request by contacting the corresponding author.

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Domain 1: Research team and reflexivity			**Comment**
Personal Characteristics			
1.	Interviewer/facilitator	Which author(s) conducted the interview?	See Methods (Page 7)
2.	Credentials	What were the researcher's credentials? *E.g. PhD, MD*	Credentials are included in the Author's Contributions section (Page 29)
3.	Occupation	What was their occupation at the time of the study?	See Affiliations of the author team (Page 1)
4.	Gender	Was the researcher male or female?	See Authors Contributions (Page 29)
5.	Experience and training	What experience or training did the researchers have?	See Author's Contributions (Page 29)
Relationship with participants			
6.	Relationship established	Was a relationship established prior to study commencement?	Relationship was not established prior to the interviews (see Methods - Page 6).
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? *E.g. personal goals, reason for doing the research*	Participants knew that the research team was comprised of a group of MScPT students at the University of Toronto who were advised by faculty at the Department of Physical Therapy. (see Methods – Page 6).
8.	Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? *E.g. bias, assumptions, reasons and interests in the research topic*	Participants knew that this research was done by students in partial fulfillment of the requirements for a MScPT degree at the UofT (see Methods Page 6 and Authors` Contributions Page 29).
Domain 2: Study design			
Theoretical framework			
9.	Methodological orientation and theory	What methodological orientation was stated to underpin the study? *E.g.*	We conducted a descriptive qualitative study (See the first

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		grounded theory, discourse analysis, ethnography, phenomenology, content analysis	sentence in the Methods – Page 5)
Participant selection			
10.	Sampling	How were participants selected? *E.g. purposive, convenience, consecutive, snowball*	See Page 6-7 (Methods)
11.	Method of approach	How were participants approached? *E.g. face-to-face, telephone, mail, email*	See Page 6-7 (Methods)
12.	Sample size	How many participants were in the study?	25 participants. See the first sentence in the results (Page 9)
13.	Non-participation	How many people refused to participate or dropped out? Reasons?	Of the 12 Health care providers who were approached, and met inclusion criteria, 12 agreed to participate. Of the 14 people living with HIV who were approached and met inclusion criteria, 13 agreed to participate. No participants withdrew from an interview or focus group (see Results – Page 9).
Setting			
14.	Setting of data collection	Where was the data collected? *E.g. home, clinic, workplace*	Specialty hospital in Toronto (Casey House), or at location of choice of health care providers, or via Skype. See Methods (Page 8)
15.	Presence of non-participants	Was anyone else present besides the participants and researchers?	For interviews (2 members of the research team (1 interviewer; 1 field note taker). For focus groups (3 members of the research team (1 facilitator; 2 field note takers) See Methods (Page 8)

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16.	Description of sample	What are the important characteristics of the sample? *E.g. demographic data, date*	See Table 1 (Page 9-10) and Results (Page 9)
Data collection			
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	See Methods (Page 7)
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?	No (Page 8)
19.	Audio/visual recordings	Did the research use audio or visual recording to collect the data?	Each interview was audio recorded. See Methods (Page 8)
20.	Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were taken throughout the interview. See Methods (Page 8)
21.	Duration	What was the duration of the interviews or focus group?	Approximately 30-90 minutes. See Results (Page 9)
22.	Data saturation	Was data saturation discussed?	Yes. We ceased the interviews at 12 and focus groups at 2 (with 13 participants); which was the point when no new categories emerged. See Discussion (Page 28)
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No (Page 8)
Domain 3: analysis and findings			
Data analysis			
24.	Number of data coders	How many data coders coded the data?	See Data Analysis (Page 8)
25.	Description of coding tree	Did authors provide a description of the coding tree?	See Data Analysis (Page 8)

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26.	Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived from the data. See Data Analysis (Page 8)
27.	Software	What software, if applicable, was used to manage the data?	NVivo 10© qualitative software (Page 8)
28.	Participant checking	Did participants provide feedback on the findings?	No. We translated findings back to the community (presentations, fact sheet). See Patient and Provider Involvement (Page 6)
Reporting			
29.	Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? *E.g. participation number*	See Results (Pages 12-25)
30.	Data and findings consistent	Was there consistency between the data presented and the findings?	Yes (Page 12-25)
31.	Clarity of major themes	Were major themes clearly presented in the findings?	Yes. See Results (Page 12-25)
32	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes. See Results (Page 12-25)

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