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ORIGINAL PAPER

Physical Activity and Mental Health in Children and Youth: Clinician Perspectives and Practices

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Abstract

Background Rates of mental health challenges among children and youth are on the rise. Physical activity has been identified as a promising intervention to improve mental health outcomes for youth.

Objective This study aimed to investigate how mental health clinicians perceive and utilize physical activity as a mental health intervention for children and adolescents.

Methods Seventy-four Ontario mental health clinicians (psychologists, psychotherapists, and social workers) were surveyed about their perspectives and practices related to physical activity as part of mental health care for children and adolescents using a mixed-methods approach. Survey respondents were also asked about barriers to including physical activity in care.

Results Although 100% of clinicians agreed that physical activity was beneficial to their own and to their clients' mental health, only 61% reported prescribing physical activity to their clients. Barriers to prescribing physical activity as a treatment option included lack of training, time, and resources. Clinicians who were more physically active themselves were more likely to view physical activity as beneficial for mental health and were less likely to view time as a barrier to discussing and prescribing physical activity in their practice. Many clinicians expressed a need for more training, knowledge, and resources.

Conclusions The results of this study suggest that with improved access to training and resources, clinicians will be well-positioned to leverage the benefits of physical activity for mental health in their practice.

Keywords Physical activity · Mental health · Psychology · Social work · Psychotherapy

Introduction

One in five Canadians live with mental health challenges (George et al., 2015). Individuals with mental health challenges have a lower life expectancy and are at an increased risk of experiencing chronic health conditions (Fazel, 2014; De Hert et al., 2022). Across clinical disorders, 70% of symptoms are present before the age of 18, indicating that mental

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illness is significantly impacting children during their developmental years (Jones, 2013). Children who experience psycho-emotional issues are more likely to have social functioning problems, lower academic achievement, and continue to experience mental health challenges as adults (Esch et al., 2014; Sellers et al., 2019). Around 20% of youth experience symptoms of mental disorders, a number that has likely gone up since the COVID-19 pandemic (Malla et al., 2018; Samji et al., 2022). Moreover, individuals who experience mental health disorders such as depression have a higher mortality risk due to less physical activity and increased sedentary behaviour (Schuch et al., 2017; Vancampfort et al., 2017). Treatment options often include cognitive-behavioural therapy or other talk therapies and pharmacological approaches (Bandelow et al., 2022; Roiser et al., 2012). Engaging in physical activity has also been identified as a promising supplemental treatment to support mental and physical health (Biddle et al., 2019; Brown et al., 2013; Rodriguez-Ayllon et al., 2019; Tomporowski et al., 2011). Clinicians who provide mental health care have a key role in determining access to and uptake of physical activity as a mental health intervention. The current study will investigate the perspectives and behaviours of clinicians to determine how physical activity is discussed in mental health care and to identify avenues to reduce barriers to its inclusion.

A growing body of literature has demonstrated that physical activity can be an effective intervention for a variety of mental health conditions (Kvam et al., 2016; Brown et al., 2013; Rosenbaum et al., 2014; Smith et al., 2021). Physical activity is defined by the World Health Organization (WHO) as "any bodily movement produced by skeletal muscles that requires energy expenditure above resting level" (2021). Physical activity can include exercise, but may also include bodily movements such as playing, working, house chores, recreational activities, and active transportation such as biking or walking. Physical activity has been linked to improved affect, mood, emotional regulation, self-efficacy, and motivation, as well as decreased depressive and anxiety symptoms in diverse populations (Biddle et al., 2019; Dale et al., 2019; Peluso et al., 2005; Mata et al., 2012). Children and adolescents who engage in more physical activity were shown to have lower odds of psychological distress and mood disorders, including major depression and bipolar disorder (He et al., 2018) and higher ratings of self-efficacy (Cataldo et al., 2013). Furthermore, youth who are more physically active report overall higher ratings of life satisfaction than their less active peers (Valois et al., 2004). There are several possible mechanisms underlying the link between physical activity and mental health. On the neurological level, physical activity leads to a release of endorphins and increased levels of brain-derived neurotrophic factor, which are thought to lead to positive structural and functional changes in the brain (Rodriguez-Allyon et al., 2019; Cotman et al., 2007). Additionally, youth participation in physical activity and the corresponding decrease in sedentary time may lead to positive experiences and social connections, which may in turn lead to improvements in mental health (Doré et al., 2020).

However, less than 17% of children meet the WHO recommendation of 60 min of moderate to vigorous physical activity per day (Chaput et al., 2020; Colley et al., 2011). In both Canada and parts of the United Kingdom, sedentary (inactive) time during waking hours by seven years of age was reported at 51% and by 15 years of age was reported at between 62 and 74%. (Colley et al., 2011; Janssen et al., 2016). Given the insufficient adherence to WHO physical activity guidelines, the increasing rates of sedentarism, the growing rates of psycho-emotional problems presenting in youth, and the myriad benefits of physical activity for mental health, there is a call to better include physical activity as a potential psychological treatment option.

This inclusion of physical activity as part of mental health treatment is consistent with prominent psychological theories, including the biopsychosocial framework. This

framework has been used to describe the factors influencing mental health. This framework asserts that mental well-being is impacted by biological and social factors, as well as internal psychological factors (Hogan, 2019). Although social and psychological factors have traditionally been the focus of psychotherapy, mental health clinicians are increasingly taking a whole-person approach that includes biological and physical contributors to health and well-being (Fleuridas & Krafcik, 2019). This often includes collaboration with other professionals to provide medication treatments, but can also include activities such as the discussion of physical activity with clients, given that physical activity impacts mental health via biological and physical mechanisms. An important first step to understanding how physical activity recommendations by mental health clinicians reside within a biopsychosocial framework is to identify clinicians' perspectives of the role of physical activity in mental health care.

Despite the evident benefits of physical activity for mental health, minimal work has investigated the application of this research in clinical practice. A few studies have identified the rates at which clinicians discuss physical activity with their clients, as well as facilitators and barriers to these discussions. Reported rates of physical activity discussion vary, with between 40% (Phongsavan et al., 2007) and 83% (Burton et al., 2010) of practitioners reporting having recommended physical activity to their clients. In a 2018 study involving a variety of health care professionals, 64% reported prescribing physical activity for issues related to mental health daily (Way et al., 2018). In another study, 53% of psychologists reported asking new clients about their physical activity behaviours (Wendt, 2005), although it was unclear whether these discussions extended beyond the initial intake. Mental health providers were more willing to provide verbal (59.7%) than written (3.1%) physical activity recommendations (Mailey et al., 2022). Barriers to discussing and prescribing physical activity for mental health include clinician perception that clients will not engage in physical activity or that the recommendation will constitute a burden for the client (Burton et al., 2010; deJonge et al., 2020; Mailey et al., 2022; McEntee & Halgin, 1996; Way et al., 2018), clients' expectations that therapy will be talk-based (deJonge et al., 2020), clinicians' access to physical activity resources for referral (deJonge et al., 2020; Way et al., 2018), lack of clinician training or knowledge (Mailey et al., 2022; Radovic et al., 2018; Way et al., 2018), and clinician belief that providing physical activity recommendations would be too directive (McEntee & Halgin, 1996). Facilitators to addressing physical activity as part of mental health include clinician perception that a client will benefit from physical activity (Burton et al., 2010; deJonge et al., 2020; McEntee & Halgin, 1996), clinician confidence discussing physical activity (Burton et al., 2010), clinician engagement in physical activity behaviours (Burton et al., 2010; McEntee & Halgin, 1996; Way et al., 2018), and working in a private practice setting (Burton et al., 2010). Although this collective work provides insight into how some clinicians address physical activity and mental health with their clients, nearly all studies involved clinicians working with adult clients. It remains unclear how clinicians who work with children and adolescents address physical activity in the context of mental health.

To our knowledge, no prior work has investigated how clinicians who work with children and adolescents discuss and prescribe physical activity for mental health. Some research has investigated clinicians' perspectives of physical activity as a treatment method for adolescents with depression (Radovic et al., 2018), and other work has considered clinicians who work with children occluded within a larger sample (Mailey et al., 2022). This gap in the literature is important to consider because of key differences in clinical practice between children and adults. First, clinicians who work with children may provide physical activity recommendations to guardians rather than

discussing them directly with the client. Children may also have less agency over their schedule and less ability to implement recommendations without guardian support. Second, children are often more likely to participate in some form of physical activity as part of their daily routine (i.e., physical education class), which may change how clinicians view the importance of physical activity recommendations. Third, physical activity guidelines differ between children and adults; children and adolescents are recommended to engage in 60 min per day of moderate to vigorous physical activity, while the recommendation for adults is approximately 20 min per day (150 min per week) (Canadian Society for Exercise Physiology, 2012). Thus, it may be more challenging for clinicians to recommend physical activity options for younger age groups who require longer daily bouts. Taken all together, these factors may impact the way clinicians address physical activity as a treatment option for mental health among children and adolescents. Therefore, gaining an understanding of how mental health clinicians currently address physical activity in their practice with youth and what barriers they face is an essential incremental step. This will lay the foundation for understanding how to improve implementation of evidence-based physical activity interventions at the level of routine clinical practice.

The current study aimed to examine how clinicians working with children and adolescents address physical activity in their practice by answering four research questions: (1) What are mental health clinicians' perspectives about physical activity in the maintenance of their own and their clients' physical and mental health?; (2) What are the physical activity prescription behaviours of mental health clinicians who work with children and youth?; (3) What barriers do mental health clinicians perceive to prescribing physical activity for their clients?; and (4) Do clinicians' personal relationship with physical activity influence their perspectives and behaviours related to discussing and prescribing physical activity?

Hypotheses

In regards to the first research question, it was hypothesized that clinicians would have positive perspectives about physical activity and its role in mental health, as clinicians have previously endorsed prescribing or recommending physical activity (Burton et al., 2010; Way et al., 2018). Perspectives may have increased in positivity over previous research, as more clinicians are taking a biopsychosocial approach than in the past (Fleuridas & Krafcik, 2019). For the second research question, it was hypothesized that the majority of clinicians would endorse prescribing physical activity to clients, as found previously in the adult mental health literature (Burton et al, 2010; Way et al., 2018). However, the rate of prescription among clinicians working with youth was expected to be lower, as clinicians who work with youth may face additional barriers. For the third research question, it was also hypothesized that some barriers to physical activity prescription would include clinician confidence, training, knowledge, resources, and time, based on adult mental health literature showing barriers of client motivation, client expectations, clinician training, and the availability of referral resources (Burton et al, 2010; Way et al., 2018). For the fourth research question, it was hypothesized that clinicians who engaged in more physical activity in their own lives would be more likely than those who engaged in less physical activity to prescribe physical activity to their clients and that they would report fewer barriers to prescription.

Methods

Survey Design and Respondents

The study utilized a convergent parallel mixed-methods design (Almeida, 2018; Schoonenboom & Johnson, 2017) with quantitative and qualitative components presented in survey format. The survey was open to all respondents who were practicing as a psychologist, psychotherapist, or social worker in Ontario and who work with children or adolescents. The survey consisted of 58 questions and used a mix of multiple-choice, single-choice, and short answer questions to query respondents about their demographic information, their experience, training, and willingness to discuss and prescribe physical activity to their clients, attitudes toward the use of physical activity as a treatment option, and their own experiences with physical activity.

The study was fully approved by the institution's research ethics board and voluntary, informed consent was obtained from all participants. The survey could be completed anywhere with internet access, and it was requested that participants be alone while completing the survey. Researcher MC was the primary point of contact for the study and administered the surveys. Digital poster advertisements were shared with the Facebook groups "Ontario Psychotherapists and Counsellors," "Ontario Social Workers and Social Service Workers" and "Ontario Child Psychologists". The online poster provided a direct link to the online survey. Respondents were also recruited through the Ontario Psychological Association email listserv, via emails containing study information and a link to the online survey. Lastly, respondents were recruited through personal and public social media accounts. A total of 99 respondents were recruited over a four-month data collection period (August 1st to November 30th, 2020). Twenty-five respondents did not complete all components of the survey or did not meet the inclusion criteria and therefore were removed from the dataset, leaving 74 participants in the dataset. There are approximately 26,817 employees across the three professions in Ontario leading to a margin of error of 7% at a confidence level of 80% (Czincz & Romano, 2013; Ontario College of Social Workers & Social Service Workers, 2022), which represents the degree to which the survey results reflect the views of the overall representative clinician population (Kotrlik & Higgins, 2001). The survey took approximately twenty minutes to complete. Respondents received $10 Canadian for their participation in the form of an Amazon gift card.

Survey Measurements

Clinician Physical Activity Behaviour

Questions related to aerobic physical activity and perceived aerobic fitness from the Canadian Society for Exercise Physiology (CSEP) Physical Activity and Sedentary Behaviour Questionnaire (PASB-Q) were used to measure clinicians' personal physical activity behaviour (CSEP-PATH, 2013). This measure includes nine items that address the time spent engaged in moderate physical activity, vigorous physical activity, and walking over the past 7 days.

Attitudes Toward Physical Activity

The Attitudes Towards Physical Activity (APTA) questionnaire (Kenyon, 1968; Mok et al., 2015) was modified to be relevant to clinicians practicing with children. There were 15 statements in this section that participants responded to on a 4-point Likert scale. This measures addressed respondents agreement with statements about the benefit of physical activity for their own and client's physical and mental health.

Barriers and Facilitators to Physical Activity in Clinical Practice

Participants were asked to rate their agreement with twelve statements on a 4-point Likert scale. These statements were generated to address clinician's perspectives on their education, training, confidence, knowledge, resources, and time in relation to both the discussion and prescription of physical activity. Discussion and prescription were defined for clinicians in the question instructions as follows: *Questions that refer to "discussing" physical activity mean that you have conversations with your clients and/or their guardians about physical activity in general or broad terms. Questions that refer to "prescribing" physical activity mean that you provide your clients and/or their guardians with specific, detailed, or accountable plans or recommendations for engaging in physical activity.* The items from this scale relating to confidence, knowledge, and training were used to capture the construct of clinician self-efficacy. Questions related to time and resources captured the construct of perceived barriers to the discussion and prescription of physical activity.

Discussion and Prescription Behaviours

Clinicians were asked if they have ever discussed physical activity with their clients directly, if they have ever discussed physical activity with their clients' guardians, and how often they engage in these discussions (*never*, *less than monthly, monthly, weekly,* or *more than weekly*). The same set of questions were asked for prescription behaviours. The questions were adapted from previous research (Way et al., 2018).

Written-Response Question

A single written-response question was asked of respondents at the end of the survey, "Do you have anything else to add about the role of physical activity in your clinical practice?" This question was exploratory and aimed to capture additional important contributors to physical activity recommendations in clinical practice.

Analytic Approach

All quantitative analyses were carried out in the IBM SPSS statistics software package Version 26. For demographic information, descriptive statistics were computed, including means and standard deviations for continuous variables and frequencies for categorical variables. For research questions 1, 2, and 3, descriptive statistics (frequencies) were also used. Frequencies derived from Likert scales were presented dichotomously (agree/disagree). For research question 4, Spearman correlational analyses were performed to assess how clinicians' own physical activity behaviours related to various aspects of their clinical practice. Spearman's correlations were used for non-parametric and non-normal data as

they increase power while maintaining a low Type I error rate (Bishara & Hittner, 2015). Specifically, clinicians' moderate to vigorous physical activity participation per week in minutes was calculated using items from the CSEP. Three extreme outliers were removed according to SPSS step of 1.5 × IQR (interquartile range; Hodge & Austin, 2004). The continuous variable of physical activity in minutes per week derived from CSEP was correlated with items from the *Attitudes and Towards Physical Activity* scale and the *Barriers and Facilitators to Physical Activity in Clinical Practice* scale to determine the relationship between clinician self-efficacy and perceived barriers with clinician physical activity behaviour. Significance was set to $p < 0.05$ for all analyses.

All qualitative analyses were carried out in Microsoft Excel (Version 16.72). A post-positivist lens was applied to the qualitative analysis (Henderson, 2011). This acknowledges researcher bias and potential influences of personal experience and background knowledge given that researchers had a preconception towards valuing the role of physical activity in child mental health (Ryan, 2006). Inductive content analysis was used to assess responses to the written-response question "Do you have anything else to add about the role of physical activity in your clinical practice?" This question was exploratory in nature and was not accompanied with any prompts or guides. Content analysis compresses texts into content categories based on explicit codes and was used to examine trends and patterns in the written responses provided by clinicians (Mayring, 2015, 2019). The technique was inductive as content categories were derived from the data. The content analysis aimed to identify, analyze, and report common themes from clinician responses. Specifically, the analysis aimed to identify additional themes surrounding how clinicians perceive and prescribe physical activity in their clinical practice.

In the first step of the qualitative data analysis process, participant responses were read over independently by three researchers (two masters level researchers, one doctoral level researcher; all female) to help them become familiar with the data. Following a familiarization phase, the three researchers collaboratively generated a preliminary codebook to categorize survey responses content into meaningful groups based on emerging themes. The preliminary codebook was then applied to all responses. Following, researchers consulted on the success of the codebook in capturing key themes in the data. Any coding discrepancies were reviewed and discussed, and final coding decisions were made. A final codebook was generated and reapplied to all survey responses. Themes are reported in the Results section, with excerpts from participants to illustrate key findings. Participants were not contacted for feedback.

Researchers had no relationship with study participants, had been trained in qualitative data analysis, and had prior knowledge of the physical activity and mental health literature. Two researchers were enrolled in a doctoral program within the university, and one researcher was the supervisor and held the position of assistant professor within the faculty. Participants were informed about the purpose of the research during the recruitment and consent process.

Trustworthiness

Multiple measures were implemented to ensure trustworthiness by considering credibility, dependability, and transparency. To ensure credibility, investigator triangulation was used. Multiple investigators took part in the research process, particularly in the data analysis stage. This contributed to credibility by confirming findings across multiple investigators and by minimizing any research bias (Archibald, 2016; Flick, 2004). Dependability

was promoted by creating explicit and repeatable methods through the use of recruitment scripts and survey questions. Detailed methodology and research processes were recorded throughout the research process.

Results

Demographic Information

Table 1 provides descriptive statistics for the sample demographic.

Research Question 1: What are Mental Health Clinicians' Perspectives About Physical Activity in the Maintenance of Their Own and Their Clients' Physical and Mental Health?

To answer this question, respondents completed the *Attitudes Towards Physical Activity Questionnaire* (modified from Mok et al., 2015). Consistent with hypotheses, clinicians had overall positives perspectives about physical activity. There was over 98% agreement

Table 1 Sample description

	Variables	N (%)
	Total	74 (100)
Demographic characteristics		
Gender	Man	15 (20.3)
	Woman	59 (79.7)
Age	Mean	38.21
	Median	37.5
	Range	24–63
	SD	9.68
Highest level of education	Bachelor's degree	2 (2.7)
	Master's degree	46 (62.2)
	Doctoral degree	26 (35.1)
Profession	Educational consultant	1 (1.4)
	Psychiatrist	1 (1.4)
	Psychologist	31 (41.9)
	Psychotherapist	25 (33.8)
	Social worker	16 (21.6)
Work setting	Community organization	5 (6.8)
	Hospital	15 (19.5)
	Private practice	42 (56.9)
	School	11 (14.9)
Years in profession	Mean	9.72
	Range	0.5–30
	SD	7.70

Table 2 Clinician attitudes towards physical activity (PA)

	Frequency	N (%)
	Total	74 (100)
Survey item		
PA is beneficial for my own mental health	Agree	74 (100)
	Disagree	0 (0)
PA is beneficial for my own physical health	Agree	74 (100)
	Disagree	0 (0)
PA is beneficial for my clients' mental health	Agree	74 (100)
	Disagree	0 (0)
PA is beneficial for my clients' physical health	Agree	73 (98.6)
	Disagree	1 (1.4)
Daily PA can *improve* my clients' mental health	Agree	74 (100)
	Disagree	0 (0)
Daily PA can *improve* my clients' physical health	Agree	74 (100)
	Disagree	0 (0)

Agree and Disagree responses were comprised of two responses each; Agree combined responses *Strongly Agree* + *Agree;* Disagree combined *Strongly Disagree* + *Disagree*

among clinicians that physical activity was beneficial for their own and their clients' mental and physical health (both chronically and on a daily basis). See Table 2 for full results.

Research Question 2: What are the Physical Activity Prescription Behaviours of Mental Health Clinicians Who Work with Children and Youth?

As hypothesized, clinicians were generally willing to discuss and prescribe physical activity. Clinicians were more likely to discuss physical activity with their clients (98%) than to prescribe (61%). About 60% of clinicians agreed that clients and/or their guardians were receptive to discussions about physical activity (Table 4).

Research Question 3: What Barriers do Mental Health Clinicians Perceive to Prescribing Physical Activity for Their Clients?

To answer this question, participants completed the *Barriers and Facilitators to Physical Activity in Clinical Practice* section of the survey. A strong majority of clinicians (95%) agreed that physical activity should be included as a topic in clinician education, although only 64% had opportunities to learn about physical activity within their own educations. A majority of clinicians (over 50%) agreed that they had enough confidence, training, knowledge, resources, and time to discuss and prescribe physical activity to their clients. There was variation, with at least some clinicians perceiving each of these categories as barriers to the discussion and prescription of physical activity, consistent with hypotheses. See Table 3 for full results.

Table 3 Barriers and facilitators

	Frequency	N (%)
	Total	74 (100)
Survey item		
I had opportunities to learn about the benefits of PA in my education	Agree	48 (64.9)
	Disagree	26 (35.1)
Important for PA to be included in education for mental health practitioners	Agree	71 (95.9)
	Disagree	3 (4.1)
I feel that I have enough *confidence* to discuss PA with my clients	Agree	67 (90.5)
	Disagree	7 (9.5)
I feel that I have enough *confidence* to prescribe PA to my clients	Agree	54 (73)
	Disagree	20 (27)
I feel that I have enough *training* to discuss PA with my clients	Agree	55 (74.3)
	Disagree	19 (25.7)
I feel that I have enough *training* to prescribe PA to my clients	Agree	45 (60.8)
	Disagree	29 (39.2)
I feel that I have enough *knowledge* to discuss PA with my clients	Agree	67 (90.5)
	Disagree	7 (9.5)
I feel that I have enough *knowledge* to prescribe PA to my clients	Agree	51 (68.9)
	Disagree	23 (31.1)
I feel that I have enough *resources* to discuss PA with my clients	Agree	54 (73)
	Disagree	20 (27)
I feel that I have enough *resources* to prescribe PA to my clients	Agree	46 (62.2)
	Disagree	28 (37.8)
I feel that I have enough *time* to discuss PA with my clients	Agree	54 (73)
	Disagree	20 (27)
I feel that I have enough *time* to prescribe PA to my clients	Agree	48 (64.9)
	Disagree	26 (35.1)

Agree and Disagree responses were comprised of two responses each; Agree combined responses *Strongly Agree* + *Agree;* Disagree combined *Strongly Disagree* + *Disagree*

Research Question 4: Do Clinicians' Personal Relationship with Physical Activity Influence Their Perspectives and Behaviours Related to Discussing and Prescribing Physical Activity?

Clinicians' physical activity behaviour ($M = 113.9$ min per week, $SD = 77.2$) was positively correlated with their perception of the benefit of physical activity for their own mental health ($r = 0.242$, $p = 0.04$), but there were no statistically significant correlations between clinicians' physical activity behaviour and their perceptions about the benefits of physical activity for their own physical health or their clients mental and physical health ($rs < 0.19$, $ps > 0.11$). Contrary to hypotheses, there were no statistically significant correlations between clinicians' physical activity behaviour and their self-efficacy to discuss or prescribe physical activity with clients and guardians ($rs < 0.22$, $ps > 0.07$. However, there was a significant positive correlation between clinicians' physical

Table 4 Physical activity (PA) discussion & prescription behaviours

	Frequency	N (%)
Survey item		
Have you ever *discussed* PA with clients (children/adolescents) directly?	N = 72	
	Yes	71 (98.6)
	No	1 (1.4)
Have you ever *discussed* PA with clients' guardians?	N = 72	
	Yes	56 (77.8)
	No	16 (22.2)
How often do you *discuss* PA with clients and their guardians in general terms?	N = 72	
	More than weekly	10 (13.9)
	Weekly	26 (36.1)
	Monthly	22 (30.6)
	Less than monthly	13 (18.1)
	Never	1 (1.3)
Have you ever *prescribed* PA to clients directly, meaning given specific PA recommendations?	N = 72	
	Yes	44 (61.1)
	No	28 (38.9)
Have you ever *prescribed* PA to clients' guardians directly, meaning given specific PA recommendations?	N = 72	
	Yes	32 (44.4)
	No	40 (55.6)
How often do you *prescribe* PA to clients and their guardians in specific terms?	N = 72	
	More than weekly	6 (8.3)
	Weekly	20 (27.8)
	Monthly	10 (13.9)
	Less than monthly	18 (25)
	Never	18 (25)

Table 4 (continued)

	Frequency	N (%)
Are clients receptive to discussions about PA?	N = 72	
	Agree	41 (60)
	Neutral	21 (29.2)
	Disagree	10 (10.8)
Are clients' guardians receptive to discussions about PA?	N = 69	
	Agree	44 (63.8)
	Neutral	12 (17.4)
	Disagree	5 (18.8)

N varies as some participants did not answer all questions. Agree and Disagree responses were comprised of two responses each; Agree combined responses *Strongly Agree + Agree;* Disagree combined *Strongly Disagree + Disagree*

activity behaviour and their perception of time being a barrier to physical activity discussion and prescription ($rs > 0.24$, $ps < 0.04$), such that clinicians who engaged in more physical activity were less likely to view time as a barrier to discussing and prescribing physical activity to clients and guardians. There was no statistically significant correlation between clinicians' physical activity behaviour and their perception of resources being a barrier to physical activity discussion or prescription ($rs < 0.23$, $ps > 0.06$). Furthermore, there was a significant positive correlation between clinicians' own physical activity behaviour and whether they had previously prescribed physical activity to guardians on behalf of youth clients ($r = 0.28$, $p = 0.02$).

Qualitative Data In order to gain a more comprehensive understanding of clinicians' views on the use of physical activity as a treatment option, the written-response question "Do you have anything else to add about the role of physical activity in your clinical practice?" was posed. The identified themes are represented below. Quotations from participants are provided to support the contextualization of the themes mentioned. Twenty-two participants responded to the written-response question. Fifteen responses were categorized in relation to three themes. The remaining seven responses were unrelated to any consistent theme. Responses were only coded towards one theme. No disagreements or differences of opinion were noted among responses.

Theme 1: Lack of training (Frequency 6). Participants described a lack of knowledge and training as a barrier to discussing and prescribing physical activity to their clients. This theme included wanting more knowledge, lack of specific training during education, and lack of discussion among colleagues. As one participant said, "All the information I learned about physical activity and nutrition was outside of my master's program. I believe it would be beneficial to include this and ways to speak to clients autonomously about this" (Participant 16).

Theme 2: Client-specific considerations (Frequency 6). Participants described considering the specific issues the client was facing when discussing physical activity. This theme included challenges associated with discussing physical activity with those facing eating disorders, obsessive tendencies, body image, overexercising concerns, and trauma. As one participant said:

> I also work with eating disorders. I think it's very helpful to prescribe physical activity to support mental health but also think this needs to be balanced when patients are struggling with body image concerns and over-exercise which is not always assessed (Participant 36).

Theme 3: COVID-19 considerations (Frequency 3). Participants described the impact of the pandemic on the use of physical activity as an intervention. This theme included the benefit of physical activity during the pandemic, the challenge parents faced trying to engage their children in physical activity behaviours, and increased screen time due to more time at home and online learning. As one participant said: "Parents are struggling to get kids to move. Post pandemic, discussions of screen limits, real-time social connections, routines, and exercise need to resume for MH. Poor sleep routines also contribute to lethargy, and client's negative view regarding exercise." (Participant 21).

Discussion

This study aimed to characterize the role of physical activity in the clinical practice of mental health professionals in Ontario who work with children and adolescents. Although 100% of clinicians agreed that physical activity is beneficial for mental health, only 61% reported having prescribed physical activity to their clients. Clinician-identified barriers to utilizing physical activity as a treatment option included lack of training, time, and resources. Clinicians' personal physical activity habits also impacted their clinical practice, with more physically active clinicians being more likely to prescribe physical activity and less likely to view time as a barrier to doing so. The following will discuss how this research helps to inform how clinicians can better translate the evidence-based benefits of physical activity into their practice to support the mental health of their child and adolescent clients.

Research Question 1: What are Mental Health Clinicians' Perspectives About Physical Activity in the Maintenance of Their Own and Their Clients' Physical and Mental Health?

All clinicians agreed that physical activity was beneficial for mental health, and over 98% agreed that it was beneficial for physical health. This aligns with the hypotheses and yields an increase compared to previous research showing between 78 and 88% agreement among clinicians that physical activity was important for preventing mental health problems (Burks & Keeley, 1989; Burton et al., 2010). The current study's findings are consistent with recent research that found 99% agreement among mental health clinicians that physical activity is beneficial for mental health (Mailey et al., 2022). These results are promising as they suggest that clinicians' beliefs about physical activity for mental health are positive for younger and older age groups, and that these positive perceptions have increased over time. This may be related to the broader trends that clinicians are increasingly taking whole-person, biopsychosocial approaches to care (Fleuridas & Krafcik, 2019; Gilbert, 2019).

This may be especially true in the wake of the COVID-19 pandemic, as the qualitative findings reflected clinicians' concerns about the impact of the pandemic on both physical activity and mental health. Data collection occurred in the summer and fall of 2021, so the pandemic was at the forefront of clinicians' minds. Physical activity was mentioned as especially important during times of online schooling. Clinicians noted that the pandemic was having a negative impact on children's mental health, in part due to a lack of access to physical activity opportunities as children were unable to attend school or extracurricular activities. This is consistent with research showing that the pandemic negatively impacted both mental health (Winfield et al., 2023) and physical activity participation among children and adolescents (Caputo & Reichert, 2020; Samji et al., 2022). These results underscore how clinicians are aware of the connection between physical activity and mental health, and how they are actively considering the ways that physical activity can be used to support youth during times of high stress.

Research Question 2: What are the Physical Activity Prescription Behaviours of Mental Health Clinicians Who Work with Children and Youth?

While 98% of clinicians have discussed physical activity with their clients, only 61% have prescribed physical activity. This discrepancy between clinicians' discussion and prescription behaviours may be rooted in their perceived lack of training and confidence. Clinicians reported that they prescribed physical activity with less confidence, training and knowledge compared to how they discussed physical activity. Although approximately two-thirds of clinicians indicated receiving generic training related to the benefits of physical activity, the ability to prescribe physical activity may be perceived as more specialist in nature and requiring further training. Interestingly, only 60% of clinicians agreed that clients and/or their guardians were receptive to discussions about physical activity. The reluctance of clients or guardians to discuss physical activity may further lead to clinicians' unwillingness to prescribe a physical activity plan. Nonetheless, the current study found that 98 and 61% of clinicians had discussed and prescribed physical activity, respectively, which is a substantial increase from previous findings (Burton et al., 2010) that showed only 66 and 30% of clinicians had discussed and prescribed physical activity, respectively. This is contrary to our initial hypothesis that discussion and prescription rates would be lower among child-focused clinicians than adult focused clinicians. However, this difference may also reflect the changing attitudes and increased recognition of the importance of physical activity over time. As rates of physical activity discussion and prescription increase, it will be important to track trends in children's mental health and well-being to determine if this observed increase in emphasis on physical activity in clinical practice is translating to better outcomes. Although many studies have found that physical activity is beneficial for mental health in general (Biddle et al., 2019), the specific impact of physical activity prescription as part of mental health care remains unclear.

Research Question 3: What Barriers do Mental Health Clinicians Perceive to Prescribing Physical Activity for Their Clients?

A notable barrier for clinicians was a perceived lack of training and knowledge, which coincides with hypotheses based on previous work within the adult mental health literature (Burton et al, 2010; Way et al., 2018). Two-thirds of clinicians reported that physical activity was included in their education, but over 95% reported that it would be an important topic to include. This means that over 30% of clinicians wanted education related to physical activity but did not receive it. This is an interesting gap that should be addressed in future studies, as it remains unclear how and to what extent physical activity was addressed as part of clinicians' educational pathways. More research is also needed to determine the best way to teach clinicians about physical activity and mental health. This is underscored by the fact that although 74.3 and 90.5% of clinicians reported that they had enough training and knowledge, respectively, to discuss physical activity with their clients, only 60.8 and 68.9% felt they had enough training and knowledge, respectively, to prescribe physical activity to their clients. Thus, although the majority reported having the knowledge and training to discuss and prescribe physical activity, a gap remains between these two activities, suggesting that insufficient knowledge may be an important barrier to prescription. Furthermore, there remains a notable percentage (approximately 10%) who reported not having the necessary knowledge to even discuss physical activity with clients. This

theme was also reflected in the qualitative findings, as several clinicians expressed a need for more training and a belief that more training would lead to more effective implementation of physical activity within their practice. This is meaningful given that although the research evidence and clinicians themselves overwhelmingly support the role of physical activity in mental health, clinical prescription has not caught up.

Additional training for practitioners may help to bridge this gap. For example, training in topics such as motivating clients to participate in physical activity, what type, intensity, and amount of physical activity to recommend, how to help clients access physical activity resources, and how to assess client suitability for physical activity as an intervention may be desirable (Radovic et al., 2018). Additionally, clinicians may benefit from training focused on the use of physical activity with diverse populations. In the qualitative findings, several clinicians mentioned the risks of physical activity in the context of eating disorders and indicated that they would use more caution in discussing and prescribing physical activity with this client population than others. One clinician mentioned working with clients with trauma histories and the importance of being non-prescriptive with this population. These clinicians shared valuable insights that other clinicians may benefit from; thus, it would be beneficial to create a centralized and accessible resource bank of knowledge and practices around physical activity prescription for mental health. More training may also help to increase clinician confidence, as 90.5% of clinicians reported feeling confident to discuss physical activity, but only 73% reported feeling confident enough to prescribe. Although these numbers encapsulate the majority of clinicians, some still lack confidence, particularly when it comes to prescription. Therefore, training on specific prescription-related topics (i.e., recommended amount and intensity, resource access, suitability assessment, and population-specific concerns) may increase clinician confidence and willingness to prescribe.

Similarly, insufficient access to resources and time were barriers for some clinicians, especially when it came to prescribing physical activity to clients. This result further mirrored findings within the adult mental health literature that also showed resources and time were barriers to physical activity prescription. Clinicians have previously expressed a desire for more resources including greater connections with physical activity professionals so that they can refer clients to specific physical activity programs to help develop activity plans (deJonge et al., 2020). This may be especially necessary for clinicians who serve populations of lower socioeconomic status, who are disproportionately impacted by mental health and tend to have less access to physical activity and associated resources (Reiss, 2013; Stalsberg & Pederson, 2010). Strategies toward better connecting clinicians with available resources and improving access to information may be imperative in overcoming the barrier of prescribing physical activity. Namely, the development of an empirically-informed widely- accessible toolkit acting as a resource to assist clinicians may assist with both access to resources and time. Similar to adult work by Glowacki and colleagues (2019) in addressing depression, the toolkit could include relevant research, documents for the clinician and client to use together in a therapeutic manner, as well as handouts to guide engaging in physical activity. These resources could be open access and stored on a centralized website and server.

Research Question 4: Do Clinicians' Personal Relationship with Physical Activity Influence Their Perspectives and Behaviours Related to Discussing and Prescribing Physical Activity?

Regardless of clinicians' physical activity behaviour, they similarly recognized the benefit of physical activity for their clients' mental and physical health, as well as for their own physical health. Although contrary to our hypothesis, this is promising, given that clinicians' views of physical activity are not predicated on their own physical activity behaviour. However, those who were more physically active did perceive physical activity to be more beneficial for their own mental health. This may point to a positive feedback loop wherein more physical activity participation leads to mental health benefits which leads to more positive perceptions of physical activity for mental health. Indeed, treatment seeking individuals who engage in more physical activity have a more positive perception of physical activity as a mental health treatment option (Parker et al., 2022). The current results suggest that the same pattern may also be true for clinicians.

Interestingly, clinicians' own physical activity behaviors did not impact their discussion or prescription behaviours with their clients. This is also promising in that regardless of physical activity behaviour among clinicians, they are all similarly self-efficacious when it comes to discussing and prescribing physical activity. However, those who engage in more physical activity are more willing to find the time to discuss physical activity with clients and their guardians. This may not be because they view it as more important for their clients' health, but perhaps because they perceive a greater mental health benefit to themselves and are thus more willing to take the time to discuss physical activity. Those who engage in more physical activity likely view time as less of a barrier to physical activity in general, which may carry over into finding time to discuss physical activity in their practice more easily.

Limitations

There were several limitations to this study. Firstly, the sample may have been biased in favor of clinicians with positive attitudes towards physical activity, as those clinicians may be more likely to respond to a voluntary survey on the topic of physical activity in mental health practice. Secondly, the questions in the survey were general, and did not allow insight into specific client populations (i.e., age, diagnosis, etc.) and how this might impact clinicians' decisions around incorporating physical activity. This knowledge would help elucidate the factors involved in clinicians' decision making around physical activity discussion and prescription; it would also provide insight into the populations being given access to physical activity interventions via their mental health care providers. The survey also used self-report measures, which may have created an additional source of bias in responses, either due to desirability effects or limitations in participant insight. Additionally, this study was descriptive and correlational in nature, meaning that causality cannot be determined. Future work should investigate clinician perspectives on the role of physical activity in mental health treatment using randomized or longitudinal designs.

Conclusions

This study contributes to our understanding of the perspectives and practices of mental health clinicians in Ontario specifically related to their use of physical activity in therapy. This study demonstrated that clinicians have positive perspectives on the role of physical activity in the mental health care of children and adolescents. Many clinicians are prescribing physical activity, and even more are discussing physical activity with their clients. However, many clinicians expressed a need for more training, knowledge, and resources about the role of physical activity in mental health and how to support its clinical application. Importantly, clinicians had similar attitudes towards the value of physical activity, regardless of their own physical activity participation. Overall, this study underscores that with an improvement in access to training and resources, clinicians are well-positioned to leverage the benefits of physical activity for mental health in their practice.

Declarations

Conflict of interest This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The authors declare that they have no conflict of interest.

Ethical approval Ethics approval was obtained from Western University's institutional review board. The procedures used in this study adhere to the tenets of the Declaration of Helsinki. Informed consent was obtained from all individual participants included in the study.

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