Modifying medical trainees' perspectives on vulnerable populations through engagement in community-based team sports: fostering the Health Advocate role

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Abstract

Background: The Vancouver Street Soccer league offers a low barrier program to individuals from Vancouver's Downtown Eastside to engage in team sport with the goal of creating a community that fosters healthy choices and habits. Addressing the medical needs of this vulnerable and complex population requires informed and compassionate medical care. The goal of this study was to assess medical trainees' and healthcare workers' perceptions of people affected by homelessness as well as the impact of participating in street soccer on those perceptions. **Methods**: Healthcare workers and medical trainees were invited to attend local street soccer games, and complete a self-report questionnaire after participation. **Results**: Data suggest a positive change on medical trainees' perceptions of physical capabilities and skills of persons affected by homelessness. **Conclusions**: Team sport programs that promote direct engagement with vulnerable populations may have the potential to influence the future work of health care professionals, and their involvement with Canada's marginalized populations.

Manuscript Keywords: Homelessness; Attitude of Health Personnel; Medical Education

Background

Vancouver's Downtown Eastside (DTES) represents the largest concentration of poverty in Canada. Over 16,500 people in the DTES have a household income that is less than 60% of the city's median [1]. According to a United Nations article accompanying the 2007 State of the World Population report, nearly 70% of the DTES's population had hepatitis C and 30% had HIV [2]. Furthermore, there is a high prevalence of concurrent health issues including high rates of mental health problems, addiction, and multiple non-psychiatric medical comorbidities making a very complex multimorbid group [3]. Several of the DTES residents are considered 'homeless' and access to stable and permanent housing, transitional or supportive services are lacking [3]. The combination of complex social issues in combination with such a degree of severe multimorbidity makes this population a vulnerable group society needs to advocate for in order to make this issue a public health priority.

Engaging in team sports can be a powerful vehicle to drive positive change [4]. Aside from the clear benefits on physical health, physical activity also has a positive impact on mental health [5] and psycho-social outcomes [6]. A qualitative study by Sherry et al [7] demonstrates that participating in sports is an effective means for advancing social bonding and social capital, and can improve the impact of mental health and substance abuse patterns in marginalized and at-risk individuals [7, 8]. In addition, Sport for Development Theory can advance personal development amongst many diverse populations, through organizational, physical activity, cultural enrichment and impact assessment components, all of which provide a set-structure to explain how sporting program can bring social change [9]. In spite of this, marginalized populations often encounter numerous barriers to accessing sport and medical treatment programs. For instance, lack of continuous social supports, transportation, health insurance/resources, and unstable housing are all key factors surrounding obstacles to care [10, 11]. Over the last five years, the

Vancouver Street Soccer League (VSSL), a grass-roots volunteer-driven organization, has developed a program that provides opportunities to engage in team sports for people living in the Downtown Eastside who are at risk of marginalization and social exclusion [12].

Everyone is welcomed regardless of level of physical fitness and skill level. Street Soccer "Players" represent the full spectrum of ages, genders, sexual orientations, ethnicities, and religions and social interactions amongst participants (both VSSL volunteers and players) revolve around a team sport: soccer. Once on the field, practicing or playing soccer, distinction of "volunteer" vs. "player" and divisions based on demographic variables tend to fade as all participants become united as a team.

Early VSSL volunteers who were themselves medical trainees noted that getting to know the players over time as team members was a completely different experience than meeting them in an emergency department or medical office. It's natural to empathize with one's teammates, to want the best for them on and off the field. Motivated by their own fuller understanding of under-housed people from the Downtown Eastside, they prioritized initiatives that would attract participation from more medical trainees. The most successful of these has been the VSSL's monthly games against UBC Medicine. The Medicine team tends to be composed mainly of UBC medical students, but has also featured residents, attending physicians and various allied health professionals. Both teams; medical trainees ("volunteer group") and street soccer players ("players group") benefit from the fun, the physical activity, and the social interactions within and across teams. For example, Street soccer players get to encounter the human side of medical providers including cooperation, communication, and good sportsmanship outside the healthcare setting. They also get to experience the students as equals in a casual atmosphere rather than as

white coats with a list of probing questions. Meanwhile, the medical trainees get to experience social bonding and interaction with this diverse population and see first-hand how the street soccer players demonstrate individual skills and achieve goals (literally and figuratively) as a team [7,12].

The role of social forces in determining health and disease is often undermined in medical training, and many medical students complete their training ill-equipped to address these concerns [13]. Several studies to date indicate that many practicing physicians' attitudes reflect: inadequate understanding of the nature of health disparities, the healthcare system and its challenges, and the training to effectively communicate with underserved populations [13-16.]. Furthermore, studies suggest that as medical training progresses, most medical trainees become increasingly cynical and less concerned with social context [13, 17, 18]. However, there is convincing evidence that medical trainees' attitude towards people affected by homelessness is modifiable via targeted interventions [7, 9, 19]. Further studies have examined education intervention amongst medical trainees and found that direct experience with individuals who are homeless have a greater impact on change in attitudes than traditional medical training [17, 20, 21]. Based on these findings and our own experiences, we hypothesized that participation in street soccer provides this kind of perception-altering experience for medical trainees through a fun, sustainable, health-promoting activity.

Methods

Participants

Enrollment of participants in the study was approved by the UBC Behavioural Research Ethics Board and consent was obtained for all participants. Twenty-six healthcare workers or trainees ('volunteers') participated in the study over a three-month period of monthly games.

Procedure

Immediately after involvement in a street soccer event, participants were asked to complete a 14-item self-report post-intervention questionnaire reflecting on their experience. Background information was acquired regarding general demographics and past and present community involvement. Participants were asked to rate their change in perception (current perception compared to perception before participation) of people affected by homelessness in categories including athletic skill, physical fitness, communication skills, burden of mental and physical illness, intellectual ability, life experience and level of aggression using Likert Scales.

Statistical Analysis

Data were analyzed through use of frequency counts, one-sample chi-square analyses and the Wilcoxon Signed Ranks test, with statistical significance set at $p < 0.05$ where appropriate. Chi-square tests were used for follow-up analysis of significant main group effects, using SPSS (v21, Chicago, IL).

Results

Volunteer Participant Demographics and Community Involvement

Of the 26 participants who completed the self-report questionnaire, 69.2% were male and the average age was 29.4 years. The majority were medical students (53.8%), while the remainder consisted of residents (3.9%) and attending physicians (11.5%) or 'other' participants (19.2%). This latter category included pre-med and graduate students as well as community health workers. Over half of the health care participants (53.8%) were involved in other community initiatives, and half of these individuals (53.8%) began their community involvement before starting medical training. Among participants involved in other community projects, 7.7% devoted 3 to 5 hours per week to community volunteering, 19.2% spent less than an hour, while the rest spent 1 to 3 hours per week on community initiatives. Demographic information is presented in Table 1, while healthcare participant involvement is summarized in Table 2.

Changes in Perspectives

In general, participation in street soccer increased health care participants' estimation of physical fitness and athletic skill of street soccer players ($p < 0.001$). However, they reported little change in their perspective of the burden of mental and physical illness ($p < 0.001$). These results are illustrated in Figure 1.

Follow-up analyses indicated significant differences between medical trainees' and attending physicians'/residents' changes in their perceptions of: burden of mental illness ($p < 0.001$), burden of physical illness ($p < 0.005$), life experience ($p < 0.05$) and level of aggression ($p < 0.001$). Results indicated the majority of medical students felt they had previously underestimated the life experience/knowledge of people affected by homelessness, while all

attending physicians and residents felt their views had not changed ($p < 0.05$). Similarly, there were significant differences between participants with current or past community involvement and participants without any on changes in perceptions of: communication ($p < 0.05$), burden of mental illness ($p < 0.001$), burden of physical illness ($p < 0.001$), intellectual abilities ($p = 0.005$), life experience/knowledge ($p < 0.01$) and level of aggression ($p < 0.001$). These results indicated that the majority of participants who were not current or past community volunteers felt street soccer players had a reduced burden of physical illness compared to what they perceived before ($p < 0.05$). The majority of individuals who currently or previously volunteered in the community felt their perception of burden of physical illness did not change ($p < 0.05$). When follow-up Chi-square analyses were performed, there was no significant difference between age or gender effects and community involvement, and age or gender effects and changes in perception.

As an aside, demographics and survey data on the street soccer participants has been analyzed and discussed in more detail in a separate manuscript (Bates et al. *In preparation*). For the interim description of this cohort and for interest sake, street soccer players participated in a separate study aimed to assess their attitudes on street soccer participation. The players' mean age was 32.4 years (range 17-60 years), 72% male, and out of the 73 participants: 34% lived in self-contained apartments, 18% resided in single-room occupancy hotels, and 5% stayed on the street (Bates et al. *In preparation*).

Discussion

To the best of our knowledge, this is the first formal examination of the effects of participation in street soccer (or any team sport engaging people affected by homelessness) by medical trainees and health care workers. The results show that participants were surprised by the fitness and skill level of the street soccer players. Despite this, most participants felt their perception of burden of physical and mental illness among people affected by homelessness was relatively unchanged. These are interesting findings, as presumably physical and mental illness contribute significantly to one's ability to demonstrate physical fitness and skill.

The post-hoc analyses show interesting differences between medical students and graduated physicians. Medical students appeared to expect less life experience and more physical illness in the street soccer players than what they learned about them through this direct informal contact. On the other hand, graduated physicians found that their expectations were more or less met on these variables. This suggests that while more experienced clinicians have a more accurate view of this population, medical students' perceptions of people affected by homelessness may contain some inaccuracies.

Because important career choices are made in medical school, these findings suggest it's imperative for medical students to have opportunities like this to learn more about people affected by homelessness in order to be able to make informed career choices that might impact this underserviced population.

In addition to the VSSL acting as a vehicle for positive change for individuals living in the DTES, it appears to have the power to change medical students' and even graduated physicians'

perceptions of people affected by homelessness. Brown et al. (2006) have reported similar benefits from students working directly with people affected by homelessness outside a traditional educational framework [21]. The current opportunity has leant itself as a 'first-step' in building medical trainees understanding of the social contexts that will shape the health of some of their future patients [13]. Although limited, research is now in progress to evaluate medical trainees' attitudes of homeless persons in key areas of health care [22], and there have been attempts to integrate components of social context into medical school curriculum such as promoting empathy through curricular efforts and focusing on role modeling [23]. Together, these findings indicate that engaging medical trainees and physicians in these kinds of activities may ultimately enhance access to care and quality of care for this at-risk population [21,24].

There are a number of limitations to this study. The small sample size makes this a pilot study to help focus future work that may or may not confirm these results in larger samples. Because of the unique nature of our intervention, we elected to create a new questionnaire rather than use a previously validated one that might have allowed better comparison with previous research. Furthermore, the questionnaire was of a post-intervention only format and therefore no comparison on healthcare trainees' perceptions could be made prior to the intervention. The questionnaire also included an open comment section to facilitate qualitative feedback. The overall responses were enthusiastic in nature and consisted of examples such as "Ensure regular games. Great opportunity to get to know people of varying backgrounds" and "Keep it going. Great quality soccer." Future research should build on a more rigorous and validated questionnaire that includes additional qualitative components. The cross-sectional nature of the study is also a potential weakness as much richer information about how perceptions can be

altered might be apparent from a longitudinal design that allowed for a more thorough baseline analysis as well as a greater degree of interaction between participants and street soccer players. In addition, there were at least three levels of selection bias. First, participants were only those who were interested enough in engaging with the VSSL in their spare time. It could be argued that that group might already be quite interested in and knowledgeable about homelessness, or that they might be a group that is more open to having their views changed by this kind of experience. Another factor in participant self-selection is that we only engaged people who wanted to play in a soccer game. It's possible this kind of intervention might not be as effective if the participants were not engaged in an activity they already enjoyed and had experience with. Thirdly, only 26 of over 80 possible participants completed our questionnaire and there may be differences between those who chose to take the time to do that and those who didn't.

Conclusion:

Despite the limitations, the results are promising and encourage growth of the relationship between UBC Medicine and the VSSL. The development of this partnership comes at an opportune time as the UBC Curriculum Renewal process is currently looking for novel and effective ways to train medical students to be proficient in all CANMEDs competencies outlined by the Royal College of Canada (Communicator, Professional, Medical Expert, Scholar, Collaborator, Manager, and Health Advocate). A number of the authors of this paper have been heavily involved in the VSSL as volunteers over the last few years and can attest to the value of participation in street soccer on developing CANMEDs roles. Our findings suggest that some of these benefits can also be extended to medical trainees who experience more peripheral and less time-consuming involvement [12]. We believe a growing relationship between the VSSL and

UBC Medicine will not only help the medical school create better, more well-rounded physicians, but also increase the chances that Vancouver's at-risk populations, including people affected by homelessness in the DTES, will see an increase in the number of young doctors serving their community in an informed and compassionate way.

Competing Interests

S Raber and F Vila-Rodriguez are volunteer board members of the VSSL. A Bates, A Agha, H Boyda, and L Tse are volunteers with the VSSL. A Barr is on the advisory board or received consulting fees from Roche Canada and received educational grant support from BMS Canada. W Honer has received consulting fees or sat on paid advisory boards for: MDH consulting, In Silico, Novartis, Lundbeck, Lilly and Roche; received honoraria from Rush University, the Korean Society for Schizophrenia Research, the Centre for Addiction and Mental Health (Toronto), the British Columbia Schizophrenia Society, The Fraser, Vancouver Coastal and the Providence Health Authorities, and the Canadian Agency for Drugs and Technology in Health; and received grants from the Canadian Institutes of Health Research (CIHR). All other authors report no financial interests or potential conflicts of interests.

Authors' Contributions

The following authors conceived and designed the research study: AMB, FVR, ATB, WH, AA, LT and HB. The following authors performed the research: AA, LT, SR and HB. The following authors analyzed the data: HB. The following authors contributed materials and analysis tools:

AMB, FVR, ATB, and WH. The following authors wrote the manuscript and reviewed the final version: AMB, FVR, ATB, SR, AA, LT, WH, and HB.

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Abbreviations

Downtown Eastside (DTES)

Vancouver Street Soccer League (VSSL)

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Table 1. Demographic Information: Participants' age, gender, and level of training

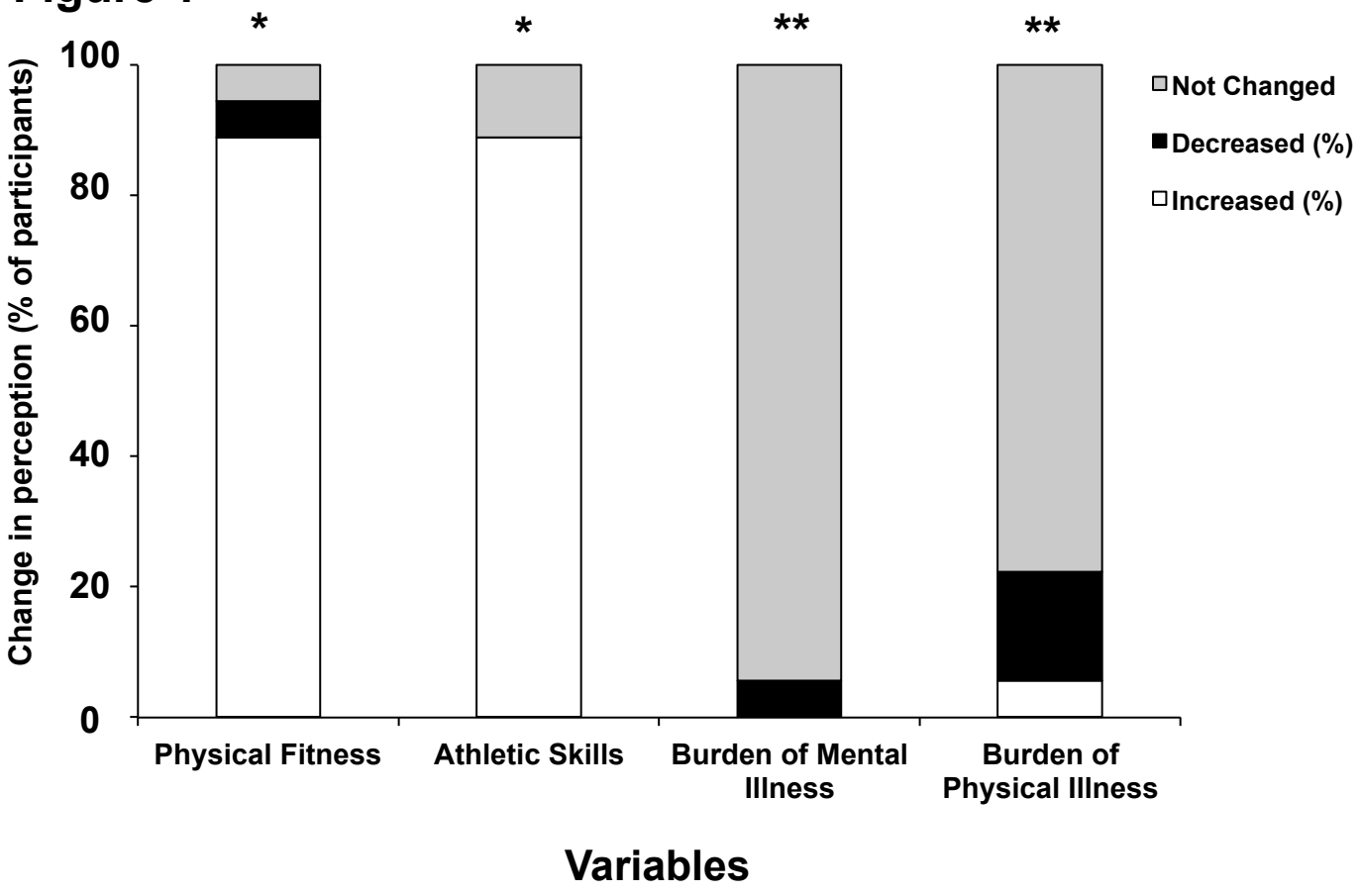
Age, years [range]	29.4 [20-58]	
Gender, %	Male	69.2
	Female	30.8
Current Position, %	Attending Physician	11.5
	Resident Physician	15.4
	Medical Student	53.8
	Other	19.2

[ ] = range of age, years; Other = Pre-med, graduate students and community health workers
Participants (n = 26) were recruited during several local street soccer tournaments to complete a self-reported questionnaire. Values represented as frequency counts.

Table 2. Healthcare participant involvement in community activities

Current community involvement, %	Yes	53.8
	No	46.2
When did community involvement begin, %	Before training	53.8
	Both before & during	3.8
Hours per week spent on community initiatives, %	Less than 1	19.2
	1 to 3	26.9
	3 to 5	7.7

Figure 1



***** **Indicates different from Decreased and Not Changed, $p < 0.001$**

****** **Indicates different from Increased and Decreased, $p < 0.001$**

Figure Legend

Figure 1: Healthcare participants' change in perception of Vancouver Street Soccer League players' physical fitness, athletic skills, burden of mental and physical illness.