

Dissecting the Obesogenic Environment of a Psychiatric Setting: Client Perspectives

Paul Gorczynski

Centre for Addiction and Mental Health

Guy Faulkner

University of Toronto and Centre for Addiction and Mental Health

Tony Cohn

Centre for Addiction and Mental Health

ABSTRACT

This qualitative study asked individuals with schizophrenia to identify environmental factors in a psychiatric facility that influence their diet, physical activity, and ultimately weight. Participants took photographs of environmental elements they perceived to be obesogenic within the hospital and then participated in a semi-structured interview during which they were asked about the identified environmental elements. The Analysis Grid for Environments Linked to Obesity (ANGELO) framework was used for the analysis of data. Participants recommended individual and environmental approaches to address obesity. The ANGELO framework is a useful tool for identifying obesogenic factors, a process that can inform environmental interventions in psychiatric settings.

Keywords: physical activity, diet, mental illness, obesogenic environments, photovoice

RÉSUMÉ

Cette étude qualitative demande aux individus schizophrènes d'identifier, dans un centre psychiatrique, les facteurs environnementaux influent sur leur régime alimentaire, leur activité physique et, finalement, leur poids. Les participants et participantes ont photographié les éléments environnementaux à l'hôpital qui selon leur perception favorisaient l'obésité. Ils ont ensuite participé à un entretien semi-structuré discutant des

Paul Gorczynski, Chronic Disease Management Program, Centre for Addiction and Mental Health, Toronto, Ontario. Guy Faulkner, Professor, Faculty of Kinesiology and Physical Education, University of Toronto; Centre for Addiction and Mental Health, Toronto, Ontario; Tony Cohn, Centre for Addiction and Mental Health, Toronto, Ontario.

This research was supported by a Seed Grant Award from the Centre for Urban Health Initiatives, University of Toronto. Special thanks to Daniel McKinnon and Nicole McKinnon for translating this manuscript's abstract.

Correspondence concerning this article should be addressed to Paul Gorczynski, Centre for Addiction and Mental Health, Chronic Disease Management Program, 1001 Queen Street West, Unit 4-1, Room 184A, Toronto, Ontario M6J 1H4. Tel: 416-535-8501 x 30070. Email: Paul.Gorczynski@camh.ca

éléments identifiés. Le cadre de la grille d'analyse pour les environnements liés à l'obésité (ANGELO) a été utilisé pour l'analyse de données. Les participants et participantes ont proposé des approches individuelles et environnementales pour combattre l'obésité. Le cadre ANGELO, outil utile pour l'identification de facteurs obésogènes, peut guider les interventions environnementales en milieu psychiatrique.

Mots clés: activité physique, régime alimentaire, maladie mentale, environnements obésogènes, photovoix

Obesity is a serious health condition that has been linked to numerous life shortening morbidities (Zhang, Rexrode, van Dam, Li, & Hu, 2008). According to the 2010 Canadian Community Health Survey, 19.8% of men and 16.5% of women were considered obese, and 41.1% of men and 27.2% of women were overweight (Statistics Canada and Canadian Institute for Health Information, 2011). The majority of Canadians, then, are either overweight or obese, and people living with schizophrenia are at equal or greater risk for obesity than individuals their same age without schizophrenia (Cohn, Prud'homme, Streiner, Kameh, & Remington, 2004). Individuals with this serious mental illness are nearly 1.5 to 2 times more likely to be obese than those in the general population (Allison et al., 1999) and live 25 years less due to higher rates of cardiovascular disease (Hennekens, Hennekens, Hollar, & Casey, 2005; Laursen, Munk-Olsen, & Vestergaard, 2012). Given the high rate of obesity among individuals with schizophrenia and the modest effects of behavioural and pharmacological interventions to reduce weight in this population (Faulkner & Cohn, 2006), researchers have suggested that ecological interventions may be needed to modify psychiatric settings that may perpetuate unhealthy dietary and physical activity behaviours. As in individuals in the general population (Thomas, Lewis, Hyde, Castle, & Komesaroff, 2010), unhealthy diets and physical inactivity have been linked to the development of obesity in individuals with schizophrenia (Brown, Birtwistle, Roe, & Thompson, 1999).

Ecological models are seen as helpful frameworks for constructing health interventions because they ensure behaviour change is addressed at the intrapersonal, interpersonal, community, and policy levels (Sallis et al., 2006). Before ecological interventions are created and implemented, researchers must conduct a thorough needs assessment of a particular environment. One tool that can be used to identify a community's needs and prioritize ecological interventions to decrease obesity is the Analysis Grid for Environments Linked to Obesity (ANGELO) framework (Swinburn, Egger, & Raza, 1999). The ANGELO framework can help identify modifiable obesogenic environmental elements (i.e., factors that influence weight gain), deconstruct them by size and type, and create environmental interventions that are both feasible and acceptable to the target population. Environmental size may be classified as either microenvironmental settings (i.e., locations where individuals purchase or consume food or partake in physical activities) or macroenvironmental sectors (i.e., groups of industries, services, or supporting infrastructure that influence diet and physical activity). The ANGELO framework further deconstructs an obesogenic environment by its type. Environmental types include: physical (i.e., what is available?); economic (i.e., what are the costs?); political (i.e., what are the rules?); and sociocultural (i.e., what are the attitudes and beliefs?). After environments have been deconstructed by their size and type, researchers examine identified obesogenic elements on three criteria: validity (i.e., what is the supporting evidence?); relevance (i.e., how big a problem is it?); and changeability (i.e., how modifiable is it?). Once all elements have been rated, they are then stratified by research or intervention

priorities. Research projects further evaluate the validity, relevance, and changeability of the obesogenic element, while intervention projects develop strategies and interventions to address it.

The ANGELO framework has been used successfully in various community settings in the general population (Swinburn et al., 1999). It has also been used to examine the perspectives of professional stakeholders at a psychiatric institution (Faulkner, Gorczynski, & Cohn, 2009). In their study, Faulkner et al. (2009) found obesogenic elements at the Centre for Addiction and Mental Health (CAMH), in Toronto, Canada, in each of the four environment types, that affected both diet and physical activity behaviours. With respect to diet, frequently identified elements in the physical environment included vending machines and unhealthy cafeteria food, which made eating healthfully a challenge for clients. Factors in the physical environment that decreased physical activity in clients included locked staircases, a lack of exercise equipment on unit floors, and limited recreational programming. Additionally, both informal and formal rules influenced activity levels. Informal rules included the length of time clients spent sitting and watching television on the unit, while formal regulations and laws shaped how often clients were able to leave the unit floor to be active. Stakeholders mentioned that due to these factors a culture of “hanging out” existed at the CAMH that promoted eating, cigarette smoking, and physical inactivity.

Although the perspective of stakeholders has been obtained, no clients have yet been asked for their perspectives on psychiatric institutions. Their insight would help create relevant participant-oriented and -directed interventions that could promote healthful eating and physical activity among the clients. By involving clients, a collaborative partnership would be created with consumers in which they provide input and identify issues, concerns, and needs in an environment, suggest possible solutions that acknowledge current community strengths and resources, and help direct discussion and future research where deficiencies are perceived. Their input would give voice to marginalized individuals who have traditionally been excluded from the research process, create a broad base of knowledge to help strengthen the consumer community, and encourage buy-in from clients to any proposed interventions (Israel, Schulz, Parker, & Becker, 1998). The purpose of this qualitative study was to collaborate with clients with schizophrenia to identify environmental factors in a psychiatric facility in Toronto, Canada, that influence their diet and physical activity, and ultimately weight. This insight would in turn inform future interventions addressing factors deemed to be most relevant and changeable.

METHODS

Setting and Sample

This study took place at the CAMH and in the surrounding neighbourhoods of Parkdale and Queen West, located in Toronto, Canada. The CAMH was chosen because the hospital has a large client population with a high rate of obesity (Cohn et al., 2004). The hospital also houses programs designed to decrease obesity and prevent chronic illnesses.

The study participants included adults 18 years of age or older with schizophrenia (any subtype, identified through chart review, American Psychiatric Association, 1994) who are overweight or obese (i.e., Body Mass Index >25) and live at or near the CAMH. Ethical approval was obtained from the CAMH Research Ethics Board and the University of Toronto Health Sciences Research Ethics Board. After ethical approval,

participants were recruited with the assistance of the Mental Health and Metabolism Clinic and from various units and services found within the Schizophrenia Program at the hospital.

In total, 25 individuals participated in this study, 22 of whom were male. Participants were between the ages of 24 and 63 years with an average age of 40.4 years ($SD = 11.5$ years). Most of the participants lived in in-patient settings (80%).

Data Collection

This study utilized two main methods to collect data. First, participants were asked to take photographs of environmental elements they perceived to be obesogenic within the CAMH environment and surrounding neighbourhood. Second, participants took part in a semi-structured interview during which they were asked about their perspective on the CAMH environment, using their photographs as prompts.

Photovoice is a process that enables people to “identify, represent, and enhance their community” through photography (Wang & Burris, 1997, p. 369). Individuals use cameras to capture their “lived” experience and then use their photographs to share their knowledge with others. As part of this photovoice process, participants were given written instructions and a brief tutorial on the digital cameras used in this study. The instructions asked participants to take photographs of places where they enjoyed being active and where they liked to eat as well as places and objects that made them less active and want to eat more. They were also asked to take a few sample photographs to ensure they were able to use the cameras. Once participants had taken photographs, a semi-structured interview schedule was used to interview the participants.

For those individuals who were able to take photographs, their photographs were loaded onto a computer screen for discussion. Each photograph was discussed with the participant, and questions concentrated on why the photograph was taken and how it represented an object or place that affected either their physical activity or eating behaviours. Once all photographs were examined, participants then discussed with the first author their general and specific experiences and their knowledge of obesogenic elements. Current obesogenic literature and the ANGELO framework informed the set of questions used in the interviews (available on request from the first author). Questions concerned factors that influence or restrict physical activity or diet at the hospital or in the neighbourhood. Specifically, questions asked about areas or locations in or near the hospital where participants like to visit, access by walking, take advantage of recreational opportunities and be active (e.g., parks or facilities), or enjoy eating at. Questions also asked about factors that make participants less active and eat more. For each identified obesogenic factor, participants were asked about: a) the magnitude of the factor in terms of limiting physical activity or increasing the amount of unhealthful food consumed; b) whether the problem was changeable; and c) how the problem could be addressed or alleviated. At times throughout the interviews, photographs were returned to in order to highlight a particular topic or reinforce a specific health concern. Each interview was audio recorded and then transcribed verbatim.

Data Analysis

Following transcription, the first author conducted thematic analysis as outlined by Braun and Clarke (2006). A deductive analytical approach was taken with the transcripts in which relevant quotations were identified as initial codes based on their fit with the established environmental types and sizes of the ANGELO

framework. Codes were then collated to create potential themes and sub-themes based on their similarities. A reflexive approach was used with the coding process; themes were checked in relation to initial codes and the whole data set. As a final step, a thematic map was created that illustrated all established themes and their interrelatedness, and names and definitions were generated for all themes. After transcription was completed, the initial analysis took approximately four months. As suggested by Lincoln and Guba (1985), several strategies were used to ensure the trustworthiness of the data. To establish credibility, we sought feedback regarding our interpretations from participants, consumers/survivors, and healthcare professionals throughout the research process. For example, a modified form of member checking was used throughout each interview to ensure that each participant's responses were understood correctly. Throughout the study, we respected our participants' time and ensured that we got the most out of each interview given that meeting for a second time was not always feasible. During the course of each interview, participants were read back all elicited obesogenic factors to ensure correct responses were captured. Additionally, throughout the analysis process, study findings were presented at several consumer/survivor and healthcare professional workshops, forums, and meetings to solicit feedback about our interpretations of the study findings. To ensure confirmability, a peer debriefing session took place between the first and second authors to ensure that all relevant themes were identified and that the data was analyzed consistently. A research protocol was written and reviewed by the authors to address dependability or consistency in the research process. This research protocol was written before the start of the study. Periodic meetings with the authors ensured the protocol was being followed throughout the entire study. Descriptions of participants and their experiences are provided to support the findings as readers consider potential transferability to their own mental health institutions and research studies.

RESULTS: DIET

In total, 18 participants took 241 photos. Participants took an average of 13.4 photographs ($SD = 3.9$). All 25 individuals participated in semi-structured interviews, including 7 individuals who had limited privileges and were not able to leave their respective units to take photographs. Environmental factors identified by participants and recommendations for intervention were grouped according to environment type as outlined in the ANGELO framework. Factors and recommendations related to diet were more salient to participants and are presented first, followed by factors related to physical activity. Where relevant, photographs taken by participants are included in the description of a theme or sub-theme. Diet factors are summarized in Figure 1.

Physical Environment

Dietary temptations in the hospital. From vending machines to cafeterias to a roaming vending cart that visited every unit in the hospital, participants said they were constantly exposed to unhealthful food in the hospital. Most problematic of all of these temptations were the vending machines. Given their negative impact on weight, participants recommended that all vending machines be removed from the hospital or overhauled to only offer healthful food products.

So what are they trying to teach us that . . . you know, that they're to help us or they're there to hurt us, right, with these vending machines. . . . Do they want us to continue to be sick or they want us to get better?
(Jonathan)

Hospital food. Many participants said that hospital food was hard to digest and bland, and lacked variety.

People make jokes about hospital food, but this is not a joke. This is more of a nightmare. . . . Yeah, I guarantee, two weeks if you ate the food here, two weeks here you wouldn't believe it. And the same thing is repetitive, week after week. . . . It's just so, it's ultra bland. From being steamed on the trays. . . . And it's not very good, really. A lot of it isn't that good, but they cook all the nutrition out of it anyway. . . . The taste and the nutrition is just not there. (Sean)

Participants explained they chose to visit restaurants near the hospital to find satisfying meals rather than eat meals available to them as part of their care. Participants recommended that units serve a larger variety of food options and improve cooking methods to preserve texture and taste. One participant said, "The food over here, that they eat here, has no taste. . . . And they go outside. . . For outside meal. . . Hamburger, hotdogs, and sausage. . . There is no healthy food around here" (Wayne).

Figure 1
Summary of Obesogenic Factors Related to Diet in the CAMH Environment

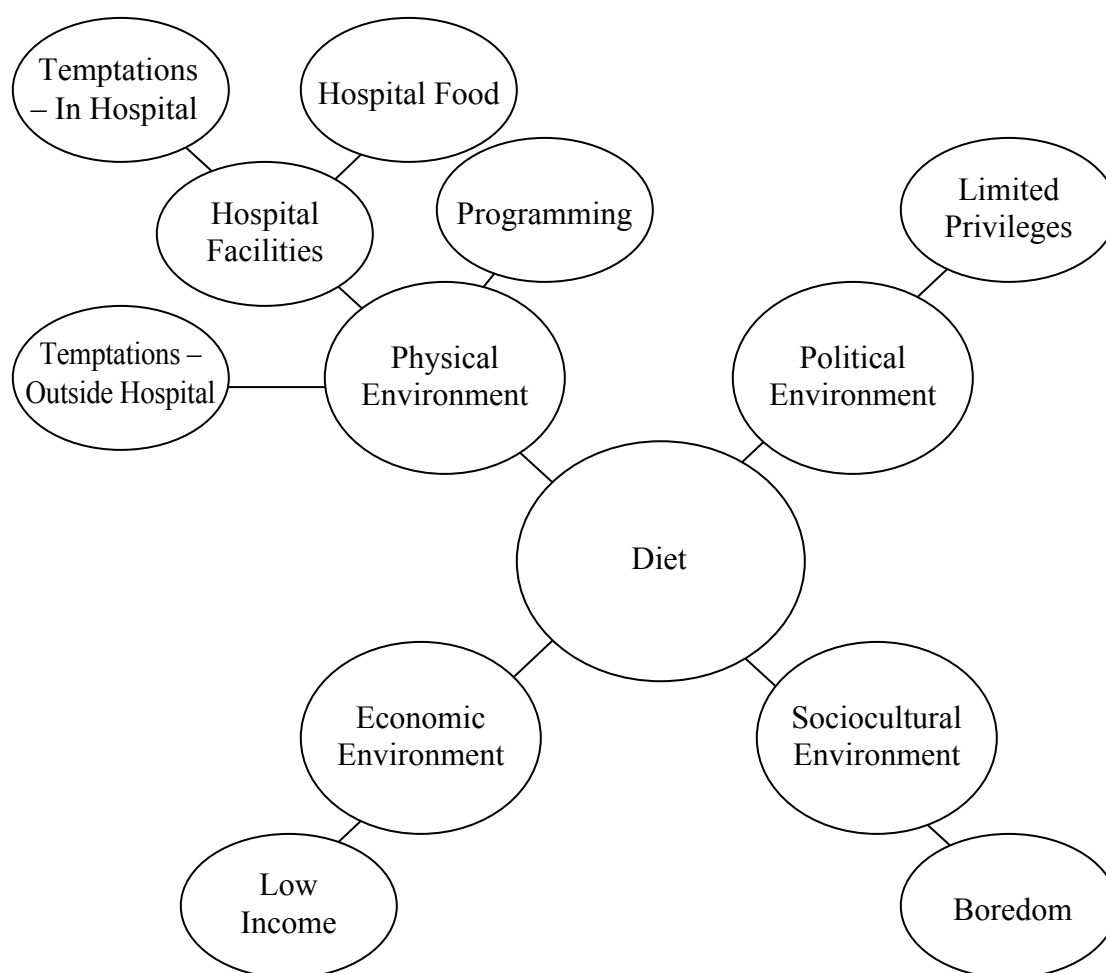


Figure 2
“Vending Machine.” Photo taken by Jonathan



Dietary temptations outside the hospital. Participants identified several convenience stores and diners that clients frequented where unhealthful food products could be purchased for a low cost. Participants recognized that these establishments operated outside the jurisdiction of the hospital and therefore did not have to change their practices to accommodate clients. Instead, participants mentioned that clients needed to exercise more self-control when it came to purchasing food.

Because of past experience ah, I don't like going to the convenience store across from the hospital because, because um, I think he sells a lot of junk food in there. And ah, you end up buying big bags of chips and two litre pops and stuff like that, you know. (Bobby)

Programming. Although participants indicated that more education about healthful diets would be helpful, individuals were also interested in opportunities to receive encouragement to eat a more healthful diet. Participants said they were seeking greater communication with staff in order to receive necessary skills training and motivation needed to eat healthfully.

I think that could really work [educational programming] because you know most of the time, you know, people tend to . . . go towards something the more they learn about it, right? They hear about it on a day-to-day basis and on a weekly basis. You know, you kind of stick in their mind and sometimes subconsciously they practice some of the things that they're learning and they don't realize it. . . . So I think that could work. (Adam)

Figure 3
“Local Restaurants.” Photo taken by Wayne



Political Environment

A number of participants mentioned that time constraints imposed by limited privileges restricted where clients could purchase food outside the unit. Often clients were limited to stores or restaurants that were within walking distance of the hospital, where they could purchase a meal or a food product and then quickly return to the unit.

They have no choice. They got to buy what they have in front and they have the money and they have no, not much time to be out in their privilege. They got to go back so they got to spend it right away. And they, and they get accustomed to it a lot. (Adrian)

Participants said that if higher quality food were served on unit floors, they would not have to leave the hospital for outside food.

Economic Environment

Participants mentioned that low incomes prevented them from purchasing higher quality and more healthful food products. One participant said, “You have nowhere to go here, around this area. You have a healthy restaurant, but they can’t even afford it. . . So, you’re kind of limited, you know?” (Jonathan).

A few participants also mentioned that clients lacked the necessary budgeting skills to purchase groceries adequately. A recommendation from one participant was to offer clients information on how to budget accordingly in order to purchase more healthful food products.

Figure 4
“Local Convenience Store.” Photo taken by Jonathan



Sociocultural Environment

Participants who lived in the hospital indicated that they had very little to do during the day. Participants indicated that there was a lack of staff and limited hospital programming and access to certain facilities, and therefore many clients ate to keep themselves occupied.

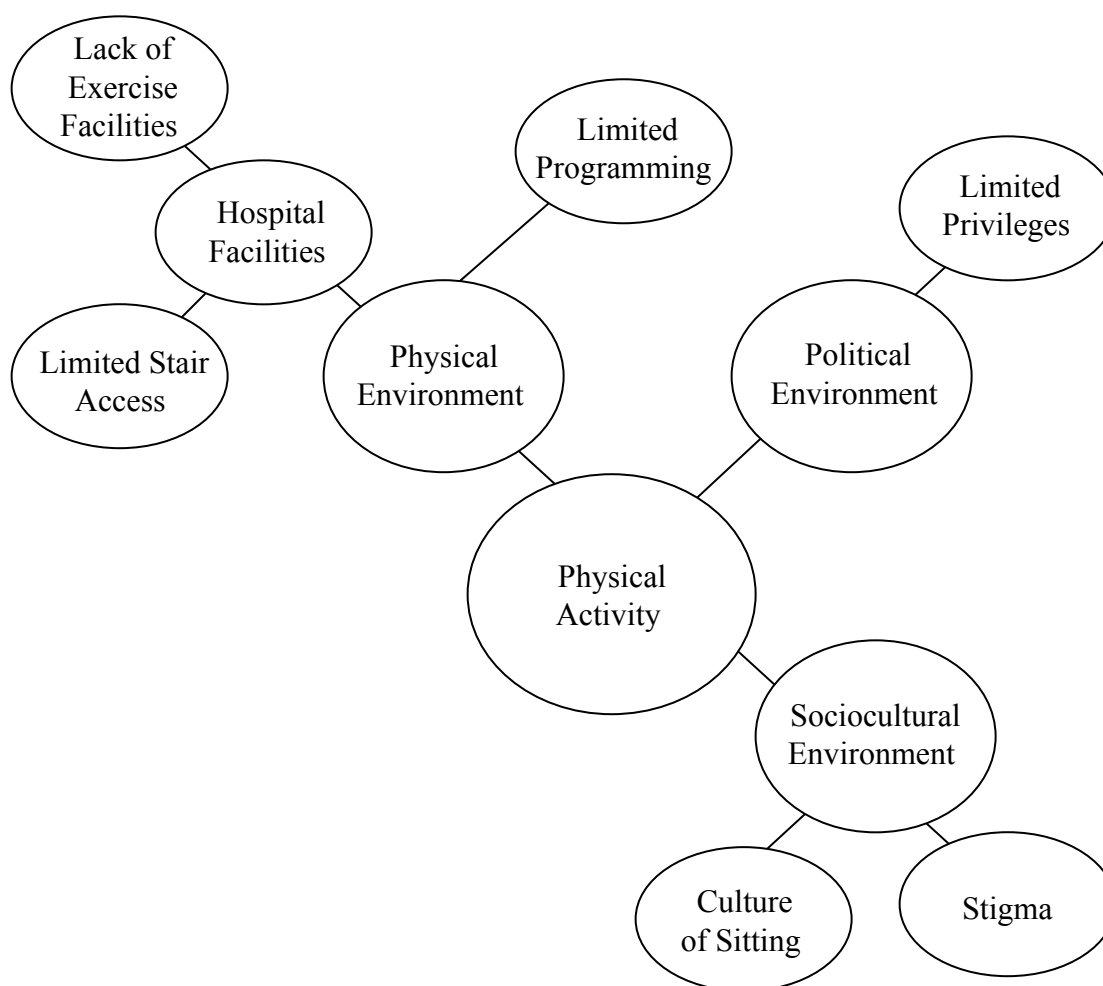
Well that's the ah, the vending machines. That's a pit-stop for me, cause ah, as I was saying to you before, you got so much time on your hands. You just eat out of boredom...Strict boredom. . . you got nothing else to do. (Sean)

Participants said that with more programming options, access to exercise facilities, and directive care, clients could be presented with more opportunities to be engaged in meaningful activities.

RESULTS: PHYSICAL ACTIVITY

Physical activity factors are summarized in Figure 5.

Figure 5
Summary of Obesogenic Factors Related to Physical Activity in the CAMH Environment



Physical Environment

Hospital exercise facilities. Participants described exercise rooms as hard to access, cramped, and with too few fitness machines. Some individuals mentioned the lengthy administrative process required to gain access to the fitness facilities while others identified inconvenient hours as a barrier. Although participants acknowledged the facilities needed to be expanded and made more accessible, they felt that only small modifications were realistic, like increased hours of operation.

Figure 6
“Gym.” Photo taken by Eric



It's a small room, yeah. They don't have room to, to have six or seven people same time. If they come in five person, you have to wait until they finish and then come back again to exercise your stuff. (Eric)

Stair access. Many participants expressed their frustration about the lack of stair access in the hospital. Participants recognized that staircases were closed for safety reasons, but expressed that taking the stairs would help them accumulate incidental physical activity throughout the day.

For patients . . . We can't use stairs here. Really except in the main buildings, like the administration building. That's the only place you can get to use the stairs. And the units, all we use is the elevators and that's where we go and come to most of the time. We can't use the stairs you need a key to use the stairs. . . . So there's no stairs accessible for us that at least going up and down the stairs you can burn off a few calories. (Adam)

Programming. Some participants believed that there was a lack of physical-activity- and sports-related programming in the hospital. One participant noted specifically a lack of options for women. She mentioned that men had opportunities to participate in a variety of organized sports and activities, while women were often offered sedentary options, like reading. This individual said, “Here, only men have [physical activity scheduling] apart from swimming. . . . They, volley and the baseball . . . is for the men. . . . Women doesn’t have any activities . . . only library” (Judy).

With respect to physical-activity- and sports-related programming, a number of participants expressed that there should be more directive care offered to clients, although several participants indicated that it was their own responsibility to become and stay active. Participants said that through directive care, clients would receive the necessary motivation, support, and knowledge to be active on a continual basis.

I just think . . . you need a lot of support from you know people that know about the whole process and recreation to help you out because sometime it’s not that you don’t want to do it but if you could get the encouragement or somebody’s always asking you . . . at least when they do that once in a week, you will get active. You know it then it can become a habit and you want to do it on a daily or every other day basis. (Ian)

Participants also noted that programming was contingent on having enough staff. Although participants agreed that staff did schedule and supervise formal and informal exercise sessions regularly, they believed this could be done more frequently and that hiring additional staff may be necessary.

Political Environment

Some participants noted that they were either not allowed to leave their units at all or were permitted to leave for only short durations scheduled a few times daily because of conditions imposed on them by the hospital or various legal proceedings. Other participants expressed frustration about getting past their unit’s main door. They felt confined due to the complex process of asking busy staff to open the unit door. For these participants, the locked unit door symbolized their confinement that left them unmotivated to be active. Due to the complexity of client privileges, many participants felt this was a difficult issue to change.

The locked door. Um we can’t get out or in all the time. When you want to, people have to wait. And then there’s times that the nurses don’t take you off the floor when you’re allowed to have 15 minutes a day. Like if you’re . . . a person with ah . . . privileges. This is what they do. But, every time, 15 minutes, when I want out, I can’t get out because they say you’re locked on the floor. . . . And I phone the . . . advocate downstairs about it. And they’re going to look into it . . . to see if there’s a volunteer that can take me out or . . . whatever. Cause staying on the floor 24 hours is . . . it’s monotonous. (Greg)

Economic Environment

Participants did not directly mention any economic factors related to their own physical activity.

Sociocultural Environment

Culture of sitting. Some participants indicated that a culture of *sitting around* existed at the CAMH. Several participants indicated that they sat in the common areas of the hospital or in their units and were sedentary throughout the day. These individuals mentioned that they needed to be engaged by staff and have

Figure 7
“Locked Door.” Photo taken by Greg



activities that aligned with their specific interests programmed for them in order to increase their levels of physical activity.

I just sit in the community centre, you know? I don't get too much physical activity, no. . . . Well, the only thing I can think of is like, instead of sitting around the television, like most of the patients, like, most of the patients should have like floor hockey games or basketball games in the gym or whatever. (Brian)

Mental illness and stigma. Some participants indicated that their mental illness limited their ability to socialize and take part in group activities. Others indicated that to minimize the threat of being stigmatized while being active, they chose to socialize with other individuals with a serious mental illness. Participants indicated that clients should have the option to participate in structured or unstructured physical activities individually or as part of a group in order to feel safe.

I walked alone most of the time. Um, um I've become bit of a loner since I was diagnosed with schizophrenia. So um, I tried to avoid um, a situation where the person um, where I'm going to get into an argument with the other person. . . . (Jeff)

If you're walking in a group, and you know. . . each other, for a period of time, you feel much safer. Like you know, like um, no one's going to attack me and stuff. (Daniel)

DISCUSSION

This is the first study that has examined the perceptions of clients of a psychiatric facility in order to understand the impact of the environment on the physical activity and dietary behaviours and weight of individuals with schizophrenia. Throughout this study, participants identified obesogenic elements that involved every type of environment. With respect to physical activity, participants identified obesogenic factors in the physical environment such as limited hospital exercise facilities, inaccessible staircases, and limited programming. These factors were linked to other factors classified under political and sociocultural environment types, including limited privileges and stigma. Despite the environmental focus of this study, some participants also spoke of their individual responsibility to become more active, sometimes neglecting to mention environmental influences altogether. The "lifestyle theory of disease" approach taken by some participants to explain low levels of physical activity described it as a result of personal failure, rather than one caused by the hospital environment (McLeroy, Bibeau, Steckler, & Glanz, 1988). Their suggestions for increasing physical activity focused on individuals taking more responsibility and changing their own behaviours rather than suggesting any changes to the environment. This perspective is not surprising given that all previous treatment approaches for obesity in schizophrenia have been behavioural or pharmacological in nature (Faulkner & Cohn, 2006). This individualistic response from some of the participants signals a need for health care providers to adopt a broader biopsychosocial perspective to deal with obesity in this population (Engel, 1977). A biopsychosocial approach would not only address physical and biological aspects of obesity but modify behavioural settings by targeting psychological and social factors associated with obesity (Engel, 1977; Sallis et al., 2006). From the interviews in the current study a combination of strategies emerged that provided opportunities to change individual behaviour as well as organizational policy and the culture itself.

Access to exercise facilities has been identified as a factor that could improve physical activity in psychiatric facilities (Cormac, Martin, & Ferriter, 2004). Cormac et al. explained that physical activity may increase if barriers to exercise and sports facilities and equipment were addressed. This could include improving hours of operation, providing convenient locations, having motivated and encouraging staff run the facilities, and ensuring equipment is available and operable.

With a poor economic climate, hospital programming may be restricted by a lower staff complement (Weiss, Malone, Merighi, & Benner, 2009). Such restrictions can also have implications on the level of privileges clients experience in psychiatric hospitals. Research has shown that staff shortages can close psychiatric wards temporarily, resulting in limited client privileges and overall programming (Haglund, van der Meiden, von Knorring, & von Essen, 2007). One way to address limited budgets and offer physical activity programming could be through partnerships with local universities and colleges. Under the supervision of recreational staff, students could fill a void in hospital programming in exchange for on-the-job

vocational training. Additionally, increasing stair use would seem like an ideal option to increase levels of incidental physical activity given the minimal level of supervision required. Stair use should be promoted as a manner to accumulate daily physical activity, but only on units where it is deemed safe. Interventions that seek to reduce overall sitting time and/or to break up extended bouts of sitting also appear warranted (see Owen et al., 2011).

With respect to obesogenic factors related to diet, clients identified aspects of the physical environment as having the greatest impact on their dietary behaviours. Although participants pointed out obesogenic aspects of the physical environment and recommended policy changes that would limit the sale of unhealthy food items in the hospital, they also stated that clients needed to take personal responsibility and make healthful dietary decisions.

The results of this study are consistent with research that has shown the hospital food environment contributing to obesity and other chronic illnesses among the client population (Reed & Chenault, 2010). Reed and Chenault (2010) note that hospitals need to reconstruct their food environments by removing easily accessible unhealthy food available for purchase on site. This could mean changing the content of vending machines, offering more healthful food in hospital cafeterias, or moving from a buffet system to tray service. A recent study at the CAMH has shown that replacing buffets with tray service reduced overall caloric intake in clients (Cohn, Grant, & Faulkner, 2010). Although participants suggested that hospitals offer more healthful food options, researchers have found that some hospital administrators believe that food choices should be left solely to the client (Freedhoff & Stevenson, 2008).

As for food available for purchase at restaurants and convenience stores near the hospital, participants recognized that little could be done to change the products they sell. A common suggestion from many individuals was to improve the quality of food served to clients in the hospital. Participants argued that by improving the quality of hospital food, clients would not be tempted to seek out and purchase food elsewhere. This recommendation has also been made by Reed and Chenault (2010). They argued that clients unsatisfied with hospital food may be more receptive to high calorie comfort food. They noted that healthful, high quality food that does not sacrifice taste may decrease unhealthy eating when combined with other interventions such as dietary education programs.

When comparing client findings from the current study with stakeholder perspectives obtained by Faulkner et al. (2009), both similarities and differences emerge between the two groups regarding how diet and physical activity could be improved to facilitate weight loss in the client population. First, although clients and stakeholders agreed that more directive and consistent programming was necessary, the two groups differed on programming type and delivery. Clients wanted direct care to help plan physical activity and dietary options while stakeholders were more concerned with consistent dietary policies that could be implemented throughout the hospital, like no ordering of take-out food and making sure clients woke up each morning to eat breakfast. Despite the identified need to examine directive approaches to care, both groups were concerned with preserving client autonomy.

Clients and stakeholders also identified a need to change food delivery operations but pointed to different aspects of food delivery that should be targeted. Clients suggested changes to the way food was prepared so that taste, texture, and nutritional value were preserved. Stakeholders wanted to address the way food was

served, changing from buffet style to individual tray service to provide higher-quality, smaller portions. Both groups identified issues with vending machines and cafeteria operations, but although both recognized that vending machines and the cafeteria sold unhealthful food products, only clients expressed a need to fully remove unhealthful food. As for points raised by only one group, clients identified that improvements to exercise facilities were necessary to help clients become active. Clients also mentioned the need for more staff to provide access to regular physical activity and dietary programming. Stakeholders instead promoted other solutions that utilized available resources.

The findings from this study are consistent with recent obesogenic research in the general population (Burton & Medcalf, 2011; Stephenson, 2012). Concerning physical activity, issues that decreased activity included limited community resources, inaccessible facilities, poorly maintained equipment and facilities, and perceptions of unsafe neighbourhoods. Regarding food environments, participants found that vending machines, institutional cafeterias, fast food restaurants, and convenience stores influenced unhealthful eating. Results from the current study show that the perceptions of environmental facilitators and barriers to physical activity and a healthful diet shared by people with schizophrenia are not different from those of the general population. The findings illustrate that individuals with schizophrenia can identify unhealthy environments that can ultimately compromise overall health as well as those in the general population can. These results show the potential broad impact of healthful environmental modifications, for all individuals in a particular environment and not just a select few, should they be introduced. The creation of healthful behaviour settings has the potential to lead to more healthful decision-making by all individuals (Sallis & Owen, 2002; Taylor, Repetti, & Seeman, 1997).

This study offers several strengths and contributions to the research literature. It is the first study to examine the perceptions of clients about which environmental factors in psychiatric facilities may influence physical activity and diet. The qualitative study design proved to be an effective manner of identifying unique obesogenic elements in the CAMH environment and it provides a useful template for other researchers and practitioners who may be interested in doing such evaluations in their own setting. Participants enjoyed engaging in the photovoice process and it provided rich material for informing interviews. Photovoice appears to be an ideal tool for people with serious mental illness as it may help to facilitate stimulating discussion around various topics and counter cognitive deficits like attention difficulties or memory problems that may make participating in interviews challenging. Photovoice may also prove to be an effective way of helping clients become advocates for change in their communities by shifting their level of participation in research from a consultative state, in which clients offer their opinions before interventions are made, to a more collaborative form of participation in which both clients and researchers design, initiate, and manage research projects (Wang, Kun Yi, Wen Tao, & Carovano, 1998). Photovoice offers opportunities for clients to engage each other in peer-led programming in which individuals teach one another about using photography as a consciousness-raising tool and then construct strategies together to overcome identified barriers. A review of photovoice as a community-based participatory research tool supports the continued use and exploration of photovoice to help bring about change in the community (Hergenrath, Rhodes, Cowan, Bardhoshi, & Pula, 2009). Further exploration of this participatory method in individuals with serious mental illness is warranted.

Despite these contributions, a number of study limitations should be addressed. First, although participants were given an opportunity to discuss both leptogenic (weight-loss causing) and obesogenic (weight-gain

causing) factors in the hospital, in this study there was a greater focus on obesogenic factors. Future studies should provide more opportunities to discuss leptogenic factors as much as obesogenic factors. Second, this study focused on one psychiatric setting, and the identified obesogenic elements may not be generalizable to other institutions or countries. Researchers and practitioners will need to conduct their own evaluations to identify unique obesogenic elements in their own settings. Additionally, participants may not be representative of the broader inpatient population. Third, over the course of this study only three women offered their perspectives on the obesogenic state of the CAMH. Although more men volunteered to take part in the study and several women declined to participate, future research needs to address the unique physical activity and dietary needs of women with serious mental illness. Researchers may wish to consider strategies to create positive and inclusive environments where women can be part of the research process.

CONCLUSION

The ANGELO framework is a useful tool for researchers and administrators to use in identifying obesogenic factors and plan environmental interventions in psychiatric settings. To improve both physical activity and dietary behaviours among individuals with schizophrenia living at the CAMH, participants identified that they would like intrapersonal interventions that would encourage and motivate them to be more healthful through individualized care, and organizational policy changes that would remove physical activity barriers and dietary temptations. These findings provide some clear direction in addressing obesity among inpatients with schizophrenia using an ecological framework.

REFERENCES

- Allison, D. B., Mentore, J. L., Heo, M., Chandler, L. P., Cappelleri, J. C., Infante, M. C., & Weiden, P. J. (1999). Antipsychotic-induced weight gain: A comprehensive research synthesis. *American Journal of Psychiatry*, 156(11), 1686-1699.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi: 10.1191/1478088706qp063oa
- Brown, S., Birtwistle, J., Roe, L., & Thompson, C. (1999). The unhealthy lifestyle of people with schizophrenia. *Psychological Medicine*, 29(3), 697-701.
- Burton, E., & Medcalf, R. (2011). Accessing experiences through "photo-voice": Children's perceptions of motivations and barriers towards physical activity participation in rural and urban environments. *Journal of Qualitative Research in Sports Studies*, 5(1), 19-36.
- Cohn, T., Grant, S., & Faulkner, G. (2010). Schizophrenia and obesity: Addressing obesogenic environments in mental health settings. *Schizophrenia Research*, 121(1), 277-278. doi:10.1016/j.schres.2010.05.024
- Cohn, T., Prud'homme, D., Streiner, D., Kameh, H., & Remington, G. (2004). Characterizing coronary heart disease risk in chronic schizophrenia: High prevalence of the metabolic syndrome. *Canadian Journal of Psychiatry*, 49(11), 753-760.
- Cormac, I., Martin, D., & Ferriter, M. (2004). Improving the physical health of long-stay psychiatric patients. *Advances in Psychiatric Treatment*, 10(2), 107-115. doi:10.1192/apt.10.2.107
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129-136.
- Faulkner, G., & Cohn, T. A. (2006). Pharmacologic and nonpharmacologic strategies for weight gain and metabolic disturbance in patients treated with antipsychotic medications. *Canadian Journal of Psychiatry*, 51(8), 502-511.

- Faulkner, G., Gorczynski, P., & Cohn, T. (2009). Psychiatric illness and obesity: Recognizing the "Obesogenic" nature of an inpatient psychiatric setting. *Psychiatric Services*, 60(4), 538-541. doi: 10.1176/appi.ps.60.4.538
- Freedhoff, Y., & Stevenson, R. (2008). Frying up hospital cafeteria food. *Canadian Medical Association Journal*, 179(3), 213. doi: 10.1503/cmaj.080975
- Haglund, K., van der Meiden, E., von Knorring, L., & von Essen, L. (2007). Psychiatric care behind locked doors: A study regarding the frequency of and the reasons for locked psychiatric wards in Sweden. *Journal of Psychiatric and Mental Health Nursing*, 14(1), 49-54. doi: 10.1111/j.1365-2850.2007.01042.x
- Hennekens, C. H., Hennekens, A. R., Hollar, D., & Casey, D. E. (2005). Schizophrenia and increased risks of cardiovascular disease. *American Heart Journal*, 150(6), 1115-1121. doi: 10.1016/j.ahj.2005.02.007
- Hergenrather, K. C., Rhodes, S. D., Cowan, C. A., Bardhoshi, G., & Pula, S. (2009). Photovoice as community-based participatory research: A qualitative review. *American Journal of Health Behavior*, 33(6), 686-698. doi: 10.5993/AJHB.33.6.6
- Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review of community-based research: Assessing partnership approaches to improve public health. *Annual Review of Public Health*, 19, 173-202. doi: 10.1146/annurev.publhealth.19.1.173
- Laursen, T. M., Munk-Olsen, T., & Vestergaard, M. (2012). Life expectancy and cardiovascular mortality in persons with schizophrenia. *Current Opinion in Psychiatry*, 25(2), 83-88. doi: 10.1097/YCO.0b013e32835035c
- Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15(4), 351-377. doi: 10.1177/109019818801500401
- Owen, N., Sugiyama, T., Eakin, E. E., Gardiner, P. A., Tremblay, M. S., & Sallis, J. F. (2011). Adults' sedentary behavior determinants and interventions. *American Journal of Preventive Medicine*, 41(2), 189-196. doi: 10.1016/j.amepre.2011.05.013
- Reed, D. B., & Chenault, H. J. (2010). Reconstructing the hospital food environment to address the obesity epidemic. *Topics in Clinical Nutrition*, 25(3), 236-243. doi: 10.1097/TIN.0b013e3181ec997e
- Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An ecological approach to creating active living communities. *Annual Review of Public Health*, 27, 297-322. doi: 10.1146/annurev.publhealth.27.021405.102100
- Sallis, J. F., & Owen, N. (2002). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 462-484). San Francisco, CA: Jossey-Bass.
- Statistics Canada and Canadian Institute for Health Information. (2011). Overweight and obese adults (self-reported), 2010 Fact Sheet. In *Health Indicators* (Cat. No. 82-221-X), Ottawa, ON: Statistics Canada.
- Stephenson, L. (2012). My community, my voice: Rural older adults speak through photography. *Journal of Extension*, 50(1), 1FEA7. Retrieved from <http://www.joe.org/joe/2012february/a7.php>
- Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting obesogenic environments: The development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Preventive Medicine*, 29(6 Part 1), 563-570. doi: 10.1006/pmed.1999.0585
- Taylor, S. E., Repetti, R. L., & Seeman, T. (1997). Health psychology: What is an unhealthy environment and how does it get under the skin? *Annual Review of Psychology*, 48, 411-447. doi: 10.1146/annurev.psych.48.1.411
- Thomas, S. L., Lewis, S., Hyde, J., Castle, D., & Komesaroff, P. (2010). "The solution needs to be complex." Obese adults' attitudes about the effectiveness of individual and population based interventions for obesity. *BMC Public Health*, 10(420). doi:10.1186/1471-2458-10-420
- Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369-387. doi: 10.1177/109019819702400309
- Wang, C., Kun Yi, W., Wen Tao, Z., & Carovano, K. (1998). Photovoice as a participatory health promotion strategy. *Health Promotion International*, 13(1), 75-86. doi: 10.1093/heapro/13.1.75
- Weiss, S. M., Malone, R. E., Merighi, J. R., & Benner, P. (2009). Economism, efficiency, and the moral ecology of good nursing practice. *Canadian Journal of Nursing Research*, 41(1), 340-365.
- Zhang, C., Rexrode, K. M., van Dam, R. M., Li, T. Y., & Hu, F. B. (2008). Abdominal obesity and the risk of all-cause, cardiovascular, and cancer mortality. *Circulation*, 117, 1658-1667. doi: 10.1161/CIRCULATIONAHA.107.739714