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Gardening on a psychiatric inpatient unit: Cultivating recovery

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Introduction

Nature-related activities such as gardening and farming have been used as part of mental health treatment around the world for centuries and beginning about 200 years ago in the United States. America's first Surgeon General, Benjamin Rush, MD wrote prolifically about the use of farms for mental health treatment (Lewis, Niven, Czechowicz, & Trumble, 1987) and started the first hospital-based garden program at Friends Hospital in Philadelphia, PA in 1817 (Taylor, 2009). This modality spread to outpatient recovery programs such as Gould Farm which began in the early 1900s (Smith & Beitzel, 2014). Although the healing quality of nature has been known and practiced intuitively, scientific inquiry into therapeutic horticulture activities has gained increased attention over the last few decades. In mental health research, the favorable impact of gardening can be contextualized by two relevant theories: attention restoration theory and psycho-physiological stress reduction theory.

Attention restoration theory suggests the ability to concentrate may be restored by exposure to natural environments (Ohly et al., 2016). Participating in gardening activities allowed an individual to move mentally and physically to a different place, provided an opportunity to feel connected to a larger world and allowed the participant to engage in their environment to meet their needs and interests, all of which contribute to the restorative environment (Kaplan & Kaplan, 1989). Engagement in gardening activities has been associated with stress reduction (Lee, Oh, Jang, & Lee, 2018; Van Den Berg & Custers, 2011), increased focused attention (Detweiler et al., 2015), social health (Harris, 2017), and self-efficacy (Salomon, Salomon, & Beeber, 2018).

The psycho-physiological stress reduction theory is focused on the effect of nature on overall physiological and emotional health (Clatworthy, Hinds, & Camic, 2013). This theory can be associated with the earlier biophilia hypothesis which posits that an innate attraction to other living organisms is a basic human quality and that the continued expression of this tendency is essential for psychological and spiritual well-being (Wilson, 1984). The therapeutic benefits of nature include significant increases in physical and psychological well-being (Soga, Gaston, & Yamaura, 2017), reduced levels of depressive and anxiety symptoms (Beyer et al., 2014), physiological relaxation (Lee et al., 2013), and improved mood state (Wichrowski, Whiteson, Haas, Mola, & Rey, 2005).

The positive physiological impacts of gardening on the human body were additionally elucidated among healthy young male university students in Korea when interaction with plants decreased diastolic blood pressure as compared with computer tasks (Lee, Lee, Park, & Miyazaki, 2015). Heart rate and self-reported fatigue and anxiety among Japanese males were lowered when exposed to nature (Song et al., 2014). In addition, studies have demonstrated that gardening positively benefited social integration and interaction (Moore, 1989; Kweon, Sullivan, & Wiley, 1998; Perrins-Margalis, Rugletic, Schepis, Stepanski, & Walsh, 2000) and promoted healthier patterns of social functioning (Langer & Rodin, 1976; Masel et al., 2018; Moore, 1989; Sempik, Rickhuss, & Beeston, 2014).

The healing effects of people-plant interaction among psychiatric populations in residential care facilities and outpatient community settings have been largely supported by the literature. Participation in gardening activities showed improvement in psychopathologic symptoms among patients with schizophrenia (Oh, Park, & Ahn, 2018), a decrease in agitation in people with dementia (Edwards, McDonnell, & Merl, 2013), and decreased levels of anxiety, depression and stress among individuals with psychiatric disorders (Kam & Siu, 2010). However, while the psychosocial and physiological benefits of nature-related activities for those in outpatient recovery from schizophrenia, mood, and anxiety disorders have been demonstrated, we did not find any research on the gardening experiences in an inpatient psychiatric setting. Thus, the purpose of this qualitative study was to explore and describe the experiences of gardening among adults in an acute psychiatric inpatient setting in the participants' own words.

Methods

A qualitative research design was selected for this novel exploratory study of the experiences of psychiatric inpatients participating in a gardening activity. Specifically, qualitative description inquiry (Sandelowski, 2000; Sandelowski, 2010) was used because the method

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leads to straightforward, rich, and descriptive elements of interpretation of an experience in the everyday life of the participants (Magilvy & Thomas, 2009). A qualitative design is consistent with giving 'voice' to participants in the spirit of the conceptual model that guided the gardening group and this research: the Recovery Model (SAMHSA, 2004). Gardening is a hands-on way to implement the Recovery Model as it allows patients to identify with and build skills to work towards finding new meaning and occupations in their life that integrate mental illness and recovery.

Recruitment

After approval from the Institutional Review Board at the University of California, Los Angeles, screening for eligibility was completed by an interviewer (either author two or three) after they had confirmed potential eligibility with the nursing staff; particularly the staff nurse assigned to the patient for the shift as they are the most informed about the patient's functioning for group participation. This initial screening included patients who were deemed able to concentrate and verbalize their experiences about the gardening group clearly in English. Excluded were patients who, at the time of the study, lacked understanding and the ability to verbalize the abstract concepts that were involved in data collection or who had previously attended the gardening group. Subsequently, one of the interviewers met with the potential participant, confirmed eligibility to enroll in the study and, if the person was eligible and volunteered to participate, obtained a signed informed consent. In the interest of disclosure the informed consent form included a statement that refusal to participate will not influence clinical care.

Of the 31 potential patients who were invited, 29 provided consent to participate. Reasons that two patients declined the invitation to participate was not planning to attend the garden group and a patient newly admitted for depression who said that he had "too much on my mind." One patient who had signed consent before the gardening started, declined to be interviewed after the group because she stated she was not feeling well. Two did not complete the garden activity and one was not available immediately for the interview after the gardening group.

Sample

The 25 participants who were recruited between July 2017 and February 2018 were predominantly female (n = 14, 56%), Caucasian (n = 15, 60%), with an average age of 28 years (range = 18–52 years) and admitted voluntarily (n = 21, 84%). The most frequent diagnoses were major depressive disorder (n = 13, 52%), anxiety disorder (n = 7, 28%), and PTSD (n = 5, 20%). (See Table 1 for more diagnostic details.) The medications that participants took at the time of the gardening group included anti-depressants (n = 19, 40%), mood stabilizers (n = 12, 25%), neuroleptics (n = 10, 21%), and anxiolytics (n = 7, 14%). There were no PRN medications taken on the day of the garden group.

Setting

The concept for the weekly garden group was initiated by occupational therapists (OTs), and implemented as an intervention by the unit's multidisciplinary team in the spring of 2015. The group is a 45 min activity, co-led by two occupational therapists which takes place on the outdoor deck of the adult inpatient psychiatric unit where there is a raised planter 2.5′ × 10′ filled with non-toxic herbs, succulents, and flowers. The group starts indoors in the unit's dayroom, with time for introductions, and sharing about what each patient may like about nature and/or gardening. The OTs then led a discussion about the tasks that will be done in the garden that day. The group subsequently moves to the garden where patients spend 20–25 min and choose from an array of garden tasks and activities: turn the soil, water plants, remove dead leaves and flowers, take clippings of the plants (with help from staff), smell/touch the plants, and create nature-based art. The group concludes with a return indoors with time for the patients to reflect on the group activities and give feedback all of which are all notated in a garden log.

Table 1
Clinical Diagnoses (N = 25).

Clinical diagnosis at the time of discharge		
Diagnosis	n	%
Major depressive disorder	13	52%
Anxiety disorder	7	28%
PTSD	5	20%
Personality disorder	4	16%
Mood disorder	4	16%
Depressive disorder	3	12%
Gender dysphoria	2	8%
Bipolar disorder	2	8%
THC use disorder	2	8%
OCD	2	8%
Psychotic disorder	1	5%
ASD	1	5%
Unspecified eating disorder	1	5%
Alcohol use disorder	1	5%
Cocaine use disorder	1	5%
Clinical diagnosis being ruled out at the time of interview		
Diagnosis	n	%
Bipolar disorder	4	16%
Substance-induced mood disorder	4	16%
Anxiety/GAD	3	12%
Personality disorder	2	8%
OCD	2	8%
Post-partum psychosis	1	5%
Brief psychotic disorder	1	5%

Data collection

Data was collected with an in-person interview in a private office immediately following the gardening experience. An interview guide with semi-structured, open-ended questions that were based on our clinical experience and existing literature guided data collection. Interviews started with a general question to allow the participant to initiate the direction of the interview while the last question provided an opportunity to contribute anything that mattered to the person that was not yet discussed (Rubin & Rubin, 2012). (See Table 2 for exemplars.) The interviews were conducted by either the second or third author. The interviewers did not attend the gardening groups. Both interviewers were trained by the first author, an expert in qualitative research. The average duration of the 25 interviews were 15.3 min (range: 11–27 min).

As part of data collection, observational field notes were written after the interviews. Relevant clinical data was obtained from the medical records.

Data analysis

The interviews were digitally recorded and transcribed by a professional transcriptionist. Subsequently, the transcriptions were checked for accuracy by the interviewer who did not conduct that interview to give the opportunity for both interviewers to listen to the conversation. To maintain confidentiality, each study participant was assigned a pseudonym and all personal identifiers in the transcripts were de-identified.

Systematic analysis was concurrent with data collection. Staying very close to the data, the first three authors met bi-weekly to code and understand the multiple dimensions of the participants' subjective

Table 2
Examples of questions and follow-up questions from the semi-structured interview guide.

We know that people have different experiences with a group activity. How do you feel about attending this group?
• What did you like most about it? • What stands out about that experience, or that activity?
I'm wondering if you can tell me what motivated you to attend the gardening group today.
• In addition to feeling good, getting some sun, are there other things that you like about going outside?
If you were to compare the gardening activity to something else in your life, what would that something else be?
• Can you help me understand the comparison even better by describing what's the similarities between riding horses and doing gardening? Or like you said walking and gardening?
What did attending the group today mean to you?
• What does (what the participant said) mean for you - Because I know those words, but I want to know specifically how it applies for you? • What does it mean for you to cultivate your soul? • Are you able to identify, or talk more about, what you think it is about nature that has those effects on you?

experiences. For the first interviews, the second and third author coded each transcript independently. Subsequently the analysis team studied the two sets of codes, discussed differences and reached consensus. From the 7th interview, the first three authors had agreed on a preliminary code list that was revised twice before the 14th interview. Using the code list, the later interviews were coded independently by the second and third author and then the codes were discussed during our three-person meetings while we remained open to the data. Ways that analytical rigor was observed throughout data collection and analysis included the neutrality of the questions, audibility and analytic triangulation.

Results

The interrelated themes that were laced throughout the interviews aggregated into motivation, experience, reflections and recommendations. Overall, participants were motivated to attend by a desire to be outside, learn something new, and simply having the garden group as a part of the day's group schedule. In describing their experience, participants highlighted the format and structure of the group, staff involvement, experiences with nature, and sensory perceptions. Reflections included ways in which gardening was favorable, how it was described as a symbol for something in life, and ways to integrate gardening into life outside the hospital. Recommendations were ways in which this sample hoped the garden would change and evolve to benefit future patients. A poignant quote that encapsulates the overall essence of our data was shared by a woman diagnosed with bipolar disorder. She said, “Gardening makes you feel productive in a way that's like, one with nature and just, it's just got a different vibe to it. It didn't feel like work. It felt like something that you do to kind of cultivate your soul a little bit.” When asked what cultivate her soul meant to her, she said, “It's a break from a lot of stress. It makes me more self-aware to be in nature. It makes me less in my own head.”

Motivation: germinating

The choice to attend the garden group was motivated by a number of factors including simply seeing gardening as an option on the unit milieu schedule, a longing to be outside, and a motivation coming from within that served as a push to participate. Positive feelings associated with longing to be in a natural environment and enjoy the sun were juxtaposed with the sterile and cold environment inside the hospital. In fact, a participant reported that despite an initial disinterest, he thought “I'd give it a chance nonetheless.” (See Table 3 for more supporting quotes.) Participants who were motivated by a curiosity to learn something new included some who had a previous existing interest in which they wanted to deepen knowledge and others for who gardening was completely novel.

Experience: cultivating growth

Noticing key aspects about the garden group and sharing an awareness of these factors were common across participants. The format and structure of the group, the impact of staff members, social aspects, nature, and sensory experiences were all featured as central parts of the gardening experience.

Format and structure

Recalling initial impressions and anticipations when the garden was first seen, a theme of pleasant surprise emerged about how the activity turned out. For some, this surprise came from an initial expectation that the small physical space of the garden would not be able to offer as much as it did. We heard that despite the small physical garden, the space itself was “open.” The surprise of the favorable outcome was noted by the participant who said, “I think what stood out to me was how much I underestimated how therapeutic and helpful a strip of soil with a couple of plants can be.”

Details about doing the physical activities such as “turning the soil,” “watering,” and “cutting off some of the dead flowers” were spontaneously remembered and introduced into the conversations as a chronological list despite the absence of interviewer prompting. Favorable judgements were often associated with these activities. The simplicity of the tasks was surprising as was exemplified by the person who said, “But after this very simple task, I didn't do much, just loosen some soil and going outside. It made me feel different, totally different afterwards.”

Some negative feedback also emerged relevant to the format. Three participants stated a disinterest in the topic of gardening such as the participant who said that the group was “disorganized.” Another person who said that she “had never really gardened before” found the experience “super, super basic.” Comparing the garden to other groups, she experienced it as “less involved” and thus unable to provide as much distraction. Additionally, the size of the group received some negative comments on a day when it was unusually large with 14 patients. With this larger group, the participants remembered feeling “pushed,” and “had to squish” because “it was kind of crowded.” It was specifically mentioned that the garden space itself was too small for the large amount of patients.

Staff

Positive impressions about staff presence in the garden were commonly described. Generally speaking, participants reported feeling encouraged, comfortable, and at ease with staff guidance. Descriptions of relief for not being judged were clearly evident as exemplified by the participant who reflected, “It's like nice to have someone like be interested in you in like a genuine way and not feel like they're like judging you.” Being thought of as trustworthy was also welcomed, “She trusted me with working with some other people that weren't as experienced…That was nice. It made me feel important.” One participant actually felt motivated to work in the garden as a sign of gratitude for the care he received from staff. Others noted how staff had extensive knowledge about the plants in the garden which led to a greater enrichment as far as their learning and interaction with other patients in the gardening group. An earlier connection with staff eased the process of being with strangers for one participant as she explained, “She was with me this morning so I already met with her and we know each

Table 3
Representations of descriptions about the gardening group.

Motivation	"It was just something about, you know, gardening being on the list. It just didn't really seem like something I wanted to do, but, yeah, I thought I'd give it a chance nonetheless."
	"I don't feel so confined. Being at one with nature, it kind of brings a sense of peace, and that's why I'm more motivated to go outside and be interactive."
	"I'm forcing myself to go outside and be an active member of the group so that my brain is stimulated and I'm moving forward, I'm not going backwards."
	"I was kind of excited about the idea of doing something different. It isn't what you would normally expect to be doing in a hospital. I was pretty tired and down when I first woke up this morning, but it kind of like helped motivate me to want to do something because it's something new and different and unexpected."
Format and structure	"Was kind of small when I first saw it, but during my gardening experience, it was really wonderful. I just felt like it was really open, it was really a great space for us all to collaborate. And even though we're such a huge group and the quote-unquote 'area' was small, the variety of things we could do and the variety of plants that was present made the experience really enjoyable and not cluttered at all."
	"We got to water the plants, like loosen the soil, like you know, basic gardening stuff. We also fed the plants with the water and the food mix and then we had a little bit of time leftover. Then we went inside and we talked a little about what we did. So, it was a good experience for me because it was like really relaxing and calming to like kind of tend to something."
	"It's a little disorganized. Like, some people are turning the soil. Some people are clipping. Some people are watering."
Staff	"The OTs are really supportive and stuff and like always like look over my shoulder and see how I'm doing and I don't know. Yeah, it's like nice to have someone like be interested in you in like a genuine way and not feel like they're like judging you for how you did something, like if I watered the plants wrong or something."
	"Everybody here has been helpful for me, and I want to give back a little."
	"I think the gardening experience is the best one because the leaders of the group seem very passionate about it, and they seem very knowledgeable, and everybody wanted to learn all about it."
Social interactions	"Well, the garden is kind of like a community of plants, and I associate that with us going into the garden and being a community together and tending to it and taking care of it. And that kind of instills me to want to take care of myself in a way…I need to tend to my needs, too."
	"Everybody seemed to be relaxed. Nobody was stressed."
	"It was nice to check-in with everyone" and "get to know my floor mates a little better".
	"To me it means that I get to work together with the other patients. And I like that because usually I'm isolated. And I'm always by myself, so working with a group of people that are going through similar situations as I am, there's no judgment if I do something wrong."
Nature	"Just being in nature makes me feel a little more connected with the world and people, and less selfish, less in my own head in that way of only kind of thinking about myself. Like, it's hard to think about yourself when you're in nature. I'm thinking, especially, like, my times in forests and things like that, when you're completely surrounded. Like, those are very transcendental experiences, and this is like, a little portion of that, by being able to have a little herb garden."
	"What is it about nature that helps me feel relaxed? Just being in it. Like, it helped me from the noises and all the worries. All you have to do in nature is just to, like, enjoy it. You don't have to worry too much."
	"I like the sun and it made me feel like—I guess a little free. It was a little freeing."
Sensory	"What surprised me most is the smell of the plants because I never noticed that."
	"The smell is very powerful and can be very grounding" and "…sometimes I feel numb. So being able to smell like the mint or the rosemary kind of awakens my senses."
	"There's plants with different textures that you can touch and plants with different smells that you can smell. So, those things kind of make it easier for me to focus."
	"It [using one's hands] kind of makes me stop thinking about the things that are bothering me and that I'm worried about, and just focus and be present and be in the moment and be mindful."
Favorables	"It was educational as well as therapeutic."
	"I think, learning new things, and then having the chance to kind of really feel and smell everything, and then, deciding which ones I wanted to take into my room. That was really fun."
	"But helping them with the plants, like, helped my mood kind of pick up, because I was distracted."
	"Something that you do to kind of cultivate your soul a little bit."
	"I did something productive. I felt good. It was a way of getting my mind off of my problems."
	"Like, it helped me from the noises and all the worries. All you have to do in nature is just to, like, enjoy it. You don't have to worry too much."
Garden as symbol	"By tending to the plants, I remind myself that I also need to react to my own self-care. So it all comes full circle for me."
	"That kind of instills me to want to take care of myself in a way, because I'm taking care of the plants."
	"If you don't harm them, they will not harm you. It's not like people…plants has this kind of patience."
	"There's ants like everywhere and like the amount of ants underneath the soil is probably more than like this whole area combined. So, it just gives me like a lot to think about, about you know, how the universe works"

(*continued on next page*)

Table 3 (*continued*)

	"It made me feel like even a little action can change your feeling about life and the world… it seems that the world is not all dark like I thought before."
Life outside	"Things grow from little seeds and then come flowers, and then die. And then new life will come again. So, yes, it's quite similar to life." "I was in 4-H Club when I was a kid. I loved 4-H Club. I used to grow my own strawberries and carrots and watermelon, all different kinds of things. Pumpkins. And we would eat it when it was finished growing. We would have it as a snack. And that was an incredible experience, and I was seven when I was doing that. And I remember it really vividly. So I would want to take that experience and kind of reincarnate it into something that I can put into my daily life when I leave this facility because it does, I think, bring a lot of peace to the mind."
	"I enjoyed it a lot. I found it therapeutic to smell it all, and it was also just relaxing to have something to do. Personally, I come from the countryside, I guess, so I mean, I like gardening as it is. So, I found it very enjoyable."
Recommendations	"You're assuming responsibility for something else, too, something else that's alive, which makes it harder for you to just die, I guess. It prevents you from wanting to - or it questions - you know, you question yourself. It will make me think into the future and plan ahead, which is something I'm going to have to grapple with if I'm contemplating suicide again. It's more like, okay, I'm going to have to donate my plants to someone else." "Enlarge the garden, enlarge the garden, enlarge the garden. It's important, so you have to be, say it three times."
	"Actually planting like ourselves, and over time seeing it grow and tending to it would be really good experience because we would be involved in helping something grow. And planting it, I think it would be really good experience. Like giving life to something."
	"You should name the herbs and then tell people about the function of it." "Sometimes I could feel a little uncomfortable getting dirty. And I think that maybe if they made gloves optional, like you could wear gloves. And so if you really want to participate but you're really afraid to get dirty, maybe are a way you can have that barrier if you don't want to actually feel the soil and feel the plants."
	"It's a very nice group. I understand that it's only once a week, but it could be maybe more often. All groups are good for me right now, but this one is one of the best ones."

other, so this way I feel much more comfortable staying with other members in the group."

Social interactions

Unsolicited observations related to how other patients positively reacted to the garden were clearly prevalent throughout the data. Gardening in a group stood out to many because it was a "bonding experience" that served as a way to meet other patients which stood out to one who said, "usually I'm isolated." In particular, descriptions of teamwork activities and the affect of others were prominent. One participant reflected on the joy in watching someone else get excited by seeing a small flower while another felt motivated to continuing engaging by someone else's enthusiasm. One person liked the gardening activity herself but noticed that her groupmates were not as engaged and used the word "discombobulated" to describe the scene on the deck. This overarching "sense of community" was reportedly enhanced by the fact that their co-participants were also experiencing struggles with mental health.

Pro-social behavior was commonly described as a result of participating as exemplified by two individuals who were both diagnosed with major depressive disorder. One reflected, "(the garden) helps me to be more comfortable in social situations and desensitize me to my worries." The other participant shared interrelated aspects of the pro-social benefits, "I guess it's choosing to be active and do like a team or group activity. It's a way to kind of socialize and be supportive with people who are going through similar issues." Another was pleasantly surprised by his interest in contributing to the post-group discussion, "I'm usually not motivated to participate in those reflection things. But, I did feel motivated to participate in this one. So, it caught me off guard, too."

Nature

The fact that our gardening activity occurred outside on the deck portion of the hospital was a highlight for many and being in a natural environment was salient. The contrast of the fresh air and sunshine to the controlled temperature of the psychiatric unit was commonly described. The gardening also offered a distraction as one participant playfully explained, "I mean it's like I was able to step back for a second and say, yeah, you know, I was really upset about this [reason for hospitalization], and then laugh about it. And then move on and then went and made some dirt balls." The narratives commonly reflected that being in nature offered a form of distraction or way to take a break from inner thoughts and worries. Nature itself was calming and that participating in an activity around promoting another life was meaningful. The only participant who expressed a caution, noted the concern for bee stings and suggested that patients are warned so that they can properly protect themselves from a sting. (This participant did not have a bee allergy.)

Sensory

Sensory experiences were richly scattered throughout the transcripts. This could in part be associated with the fact that participants were prompted by the group facilitator to gently rub the leaves and bring their fingers to their nose, observe texture and new growth, and notice the natural surroundings such as the temperature and intensity of the sun. However, without any direct question or prompt during the interview about a sensory experience, 21 of the 25 (84%) of our participants recalled at least one sensory experience. Smell was mentioned by almost all the participants although experiences of visual input, temperature, and tactile interactions with the plants were also commonly laced throughout. Sensory experiences were always favorably described such as the participant who shared an unexpected pleasant discovery that plants have a smell. In fact, numerous participants went on to recall details of the smells whether it was a type of herb or the dirt. For example, one participant talked about how the smell "grounded" her. Another person described the tactile experience as a way for him to find focus. Use of one's hands was another common theme, as many described the physical motion and tactile stimulation as the means by which they were distracted.

Prominently mentioned was the contrast between the inside of the hospital and the experience of being outside in the garden. The hospital was described as, "sterile" and the idea of being outside as beneficial "so you don't feel trapped" and "sun shines vitamin D, but it's just calming." Some participants found joy in taking pieces of the garden back to the rooms because, "I think it's going to brighten up my room a lot, and like, the smell of the citronella has been making me really happy."

Reflections: harvesting

The following section illuminates the ways in which the garden group was perceived and integrated in relation to the self. Participants offered favorable outcomes associated with gardening, the symbolic meanings of the garden, and ways to integrate gardening into life after hospitalization.

Favorables

Favorable and therapeutic terms were overwhelmingly received when asked for overall impression of the gardening experience. Words that were often used included, “interesting,” “fun,” a “good experience,” “fantastic,” “helpful,” and “engaging.” More specifically, the positive outcomes associated with participation were centered on cognition, emotions, distraction, and productivity.

Those who reported positive impact on cognition described active learning to comprehend information in conjunction with conscious awareness. For one participant, the experience of smelling the herbs was a powerful one in terms of being awake, “it's enough to kind of give you a ‘shock’ but not a negative one. It's like it brings you back (to the moment).” In describing learning, many participants shared the tasks they completed such as turning soil, watering, or pruning as examples of new knowledge obtained. Others talked about the types of plants and the joy in bringing them back to their rooms after learning the name of the plant. The sources of learning were through being with others, from direct information provided by staff, or through active inquiry. Two participants named the group as an educational opportunity that was “therapeutic,” noting that the learning was an added value to something they perceived initially as solely therapeutic.

The emotional impact of gardening was reflected in words such as “enjoy” and “happy.” These positive emotions, mentioned many times, were especially surprising given the large number of participants who were diagnosed with a mood disorder. Many others talked about how the garden resulted in feeling “calm” and ability to “relax.” Another mentioned that the garden specifically “helped my mood kind of pick up.”

Distraction from distressing thoughts (described as self-directed, related to personal problems or to treatment plans) was another positive outcome associated with gardening. For example, one participant explained that the act of taking care of the plants and being with other people trumped thoughts about herself, actively blocking them out. Others noted that the act of gardening helped them move through the anticipation of negative thoughts and instead focus elsewhere. The effect of the distraction was commonly described as improving mood, “I was a little anxious, but then once we got working on the garden then I forgot about everything and I just kept my mind on the task that I needed to do.”

Feeling productive was also a favorable outcome. Many used this word exactly, “just like helping today made me kind of feel productive, like I'm useful.” Productivity was often related to completing a task or using one's hands. One participant noted that she not only accomplished but also succeeded in doing what “what they asked us to do.”

Garden as symbol

The group served as a medium for self-reflection as many participants shared insights they gained about themselves while gardening. Generally, the small details of the garden prompted a self-association and what needed attention and care. For example: “You see many things that you ignored before…it made me feel like even a little action can change your feeling about life and the world.” Another talked about how caring for the garden led him to care for himself, “By tending to the plants, I remind myself that I also need to react to my own self-care.” When one woman noticed ants in the soil and imagined there being many more hidden from eyesight, she reported feeling as though something small can make a large impact. Another reflected on the difference between plants and people: “If you don't harm them, they will not harm you. It's not like people…plants have this kind of patience.”

Nurturing the plants was frequently linked to positive sentiments. “Taking care of something that's alive” was helpful because it was “something to actively work on” and impacted “another life to live stronger.” When participants reflected on the garden in the context of life's meaning, the cyclical nature of life in the garden was prominent as well as the comfort received from the routine around taking care of the plants and how details of the garden translated into a deeper understanding of their own experience.

Life outside the hospital

Descriptions about situations outside the hospital environment spanned both the past and anticipated future. Associated with the marked improvement to mood and overall positive experience, we heard about a desire to continue with gardening activities after discharge from the hospital. This wish was described both by participants who had gardens already at their homes and those who wanted to start a garden for the first time because it was an opportunity to “find a new passion.” The garden reminded many of positive childhood experiences and this was the motivation for continuing at home. An early childhood connection to 4H (a program for young adults that teaches agriculture, animal husbandry, and carpentry) came up, specifically that the participant “loved” it because it can “bring a lot of peace to the mind” and wanted gardening to be part of his daily life moving forward. The garden connected another participant to his origin, “the countryside,” which gave pleasant memories and the intention to continue with gardening after discharge. One participant who was admitted for suicidal ideation and major depression spoke directly about suicide. After reflecting on the gardening group, she planned to keep succulents and herbs at home because the responsibility of caring for them would cause her to think about what would happen to the plants if she was gone.

Recommendations: planning for next season

When asked for how to improve the gardening program, a recommendation from 14 participants was centered on expanding the garden in ways such as size, quantity of greenery, and the variety of plants. Another common recommendation ($n = 8$) was the wish to participate in planting and watching the growing process: “I might include initiating some plant life…like being able to start growing rather than just tending to [it].” A small number ($n = 3$) would have wanted to take a plant home with them after leaving the hospital. Five participants desired to learn more about the plants in the garden and were interested in names and functions. It was suggested that a way to accomplish this would be through labels or verbal explanations. The option to use gloves was desired by a participant who felt uncomfortable getting dirty. Other suggestions included more flowers, more time in the garden, and a place to walk barefoot in the soil. This input regarding potential changes to the gardening group highlighted ways in which this program and others can change and improve to meet patient needs.

Discussion

Overall, this descriptive study about gardening in an adult inpatient psychiatric setting was rich with positive descriptions of working in the garden alongside fellow patients and staff. For many participants, there was a cognitive, emotional, distraction, or productivity outcome as well as benefits to being with other people and exposure to nature. In fact, the few negative comments were specifically addressed in a positive light by some, in particular around the size and space of the garden itself. The ways in which the activity of gardening distracted many participants from negative thoughts and aided in grounding in the present moment were salient. These findings in our sample of psychiatric inpatients can be related to the attention restoration theory

which suggests that exposure to natural environments can restore one's ability to concentrate (Ohly et al., 2016).

Apart from distraction, the gardening also promoted pro-social behaviors such as connecting with peers and staff and having a sense of belonging and being part of a community. This finding is consistent with previous studies that showed healthier patterns of social functioning among adults who participated in nature-related activities (Langer & Rodin, 1976; Masel et al., 2018; Moore, 1989; Sempik et al., 2014). Alienation is often associated with mental illness, and as such isolative behaviors can have a negative impact on treatment such as perceived stigma that decreases adherence with antidepressants (Sirey et al., 2001), and the likelihood to return to individual or group therapy (Wade, Post, Cornish, Vogel, & Tucker, 2011). Feelings of isolation, boredom, and abandonment were associated with being in a locked unit (Lindgren, Ringnér, Molin, & Graneheim, 2018). However, engaging patients in meaningful activities, such as gardening groups, was found to help mitigate the widespread phenomena of isolation. This was achieved through social-related activities such as sharing of information, development of personal relationships, promoting cooperation among participants, and fostering communications (Marsh, Brennan, & Vandenberg, 2018; Oh et al., 2018).

Further highlights for many participants included notable sensory experiences, and having space to reflect. Across themes we noted that some of the participants had significant experiences around reflecting on the gardening process and then extrapolated and applied these insights to their own lives. The experience of relating with nature was described as both nurturing and an opportunity to learn something new. These reports highlight the interplay of healing factors present for people when engaging with horticulture: being outside, moving their body, and being in the company of others. (Perrins-Margalis et al., 2000).

The implications for why gardening offered such positive results to this sample of psychiatric inpatients echoed themes highlighted above. The act of engaging in physical activity, along with exposure to the natural environment resulted in a sense of freedom and feeling energized. This stood out not only as a physical experience but also notably in a cognitive way in descriptions of mental stimulation. Thus, for our sample, the human connection with nature powerfully awakened many aspects of the senses and ability to take on new information.

It was notable that a majority of participants recounted the chronological format and structure of the gardening group in which they had participated shortly before the interview. The act of sharing about the format beautifully facilitated reflections and a medium by which to process the gardening experience. The interviewer was simply someone to bear witness to the insights that specifically came through during this re-telling. Related to structuring the gardening experience specifically, co-leaders start the group inside the unit, help patients go outside and interact with the plants, and then return to the unit; the gardening is thus punctuated by intentional processing time indoors with the goal of aiding patients to integrate their experience. The contrast of the two environments helped to break up what many participants in this study experienced as a “sterile” indoor space. This change in environment may similarly correlate with a participant's engagement in daily activities after discharge, because being outside in the garden may aide in a person's ability to imagine themselves outside the hospital.

In a treatment setting where outside world distractions and activities are removed, the garden provided the participants an additional way to bring meaning to their day. The sense of productivity, contributing to the unit, and being part of community through gardening was a way that patient efforts fit into a larger context. This framework is in line with Viktor Frankl's theory of logotherapy, i.e. that people have an innate drive towards finding meaning that fits in with an individual or community's future and that each person is capable of identifying that meaning for themselves (Viktor Frankl Institut, 1985). As we heard from our participants, the garden itself provided them a medium to feel contributory and productive as well as the space to reflect on what that may look like in the future.

Gardening furthermore strikingly differs from common forms of therapy provided to this population. Many of the mental health groups offered in the setting of this research and others around the country focus on insight-based reflection and verbalization to facilitate a healing process. The garden group contrastingly encourages patients to participate in an activity outside of themselves and does not directly require self-reflection. Despite this, participants regularly shared ways in which the garden assisted them in reaching a deeper insight related to their recovery in a more gentle and indirect way.

Strengths and limitations

As far as we know, our study is the first to explore gardening experiences on an inpatient psychiatric setting from the personal perspective of patients. However, the results of this novel research are limited by sampling patients who were able to verbalize and function well in a group activity per the clinical assessments of the assigned registered nurse. Thus, the selection may have included those with a higher level of functioning and excluded more acutely ill patients. Furthermore, the garden in this study was outdoors and our findings may not apply to indoor settings that could have different components, such as less exposure to natural materials, and potentially fewer opportunities for physical movement.

Conclusions and implications

Based on the information from our participants as well as from staff, there are key elements to conducting a gardening group to ensure optimal results. Staff involvement is a key component for various reasons. Firstly, it was noted that staff's knowledge of gardening and the plants present in the activity was important to put patients at ease and help them to engage. Not only having the knowledge but also staff's engagement helped ease the process and mitigate patient anxiety. Importantly, the group runs most smoothly with at least two facilitators. This co-leading model is optimal in allowing for more patient engagement (so as one person can focus more on the group as a whole and the other is able to do more one to one intervention), and ensures more professional eyes on any safety concerns that may arise.

Participants commented on the significance of group size. Reaching 12 patients was too many for participants who experienced less gardening due to sharing tasks with more people. There also seemed to be a number of participants that was too few from the patient perspective as it contributed to anxiety in a different way, with too much pressure on them as a participant and reduced the community feeling obtained with more gardeners. We heard repeatedly about the value of being able to choose between some different tasks such as turning soil, watering, looking at gardening magazines, or sketching images of nature. This was helpful for engaging everyone, especially people who were not keen on getting their hands dirty. To that end, it is useful to have gloves available to address this concern.

The idea of watching something grow and taking a piece of the garden with them was powerful for those involved. Patients frequently mentioned a desire to plant a seed and watch its progression. Though this is a logistic challenge given the average length of stay in acute care settings (7–14 days at this particular unit), the desire to nurture and cultivate life was important and lent itself beautifully to the metaphor of a patient's own healing. Not dissimilarly, because of a positive relationship with the garden, many were thrilled by the idea of taking a clipping of herb with them to keep in their rooms. These bits of the garden became a transitional object of sorts to offer a reminder of the experience, provide a positive sensory experience often through sight and smell, and a way to provoke thoughts about healing sparked during the experience. In addition to taking a physical piece of the garden, it was noteworthy that participants were eager to learn and took skills

and new knowledge from the experience itself. There was value in obtaining a new skill set or hobby that many reported a desire to continue at home. This alone is a powerful use for the intervention as many of our patients may feel isolated, without much stimulation or activity to fill their days.

Implications for future research

Future quantitative research could use mixed methods to investigate the relationship between treatment goals and patients' participation in a garden group such as whether the intervention group had increased behavioral activation or increased sleep as compared with a control group who did not garden. Building on what participants in our qualitative study self-reported, improved mood, could be measured by validated scales such as the PHQ-9, POMS (Profile of Mood State), the Beck Anxiety Inventory, and/or physiological signs. Utilizing aggression scales such as the Dynamic Appraisal of Situational Aggression (DASA), the Modified Overt Aggression Scale (MOAS) and the Brøset Violence Checklist (BVC) can be used to evaluate the calming effect of gardening group participation and how decreased level of aggression contributes to length of hospital stay.

Disclosures

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