# Experiences of Patients Using a Fitness Tracker to **Promote Ambulation** Before a Heart Transplant

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Background Patients who have an intra-aortic balloon pump or a pulmonary artery catheter with vasoactive infusion while awaiting heart transplant have reduced mobility due to heart failure and activity restrictions. Stroke volume, respiratory capacity, and muscle strength decrease, and sleep disturbances occur. Patients require motivation to enhance ambulation.

Objective To explore patients' experiences with a fitness tracker to promote ambulation before heart transplant.

Methods In 2017, a fitness tracker was issued to 43 patients before heart transplant who met the study criteria, which included orders to ambulate. Semistructured interviews were conducted after 2 weeks of fitness tracker use with 8 random participants, who were followed up to enhance the credibility of and validate the findings. Responses were interpreted by using descriptive phenomenology and purposive sampling. An expert in phenomenology examined the transcript interpretations and attested that the findings were supported by the data and were internally coherent. The Colaizzi method was used to analyze data.

Results A total of 361 significant statements were identified during the participants' interviews and yielded 224 formulated meanings and 16 themes. Themes were categorized into 4 clusters: happy/delighted, motivator, beneficial, and future potential.

Conclusions Participants were happy to get a fitness tracker and motivated to be active and increase activity/ambulation. Patients expressed benefits from walks: better sleep, more stamina, and feeling stronger. They believed that this intervention could have potential benefit for future patients. (*Critical Care Nurse*. 2021;41[4]:e19-e27)

**The prevalence of heart failure (HF) has increased from 5.7 million to 6.5 million people aged 20 years and older in the United States (from 2009 to 2012),** and it is projected to increase by another 46% between 2012 and 2030, involving more than 8 million people aged 18 years and older.[1,2] Heart failure was a contributing cause in 1 of every 8 deaths in 2017.[3]

Patients with HF demonstrate symptoms that result from either a structural or functional cardiac disorder that damages the ability of the ventricles to fill with or eject blood. Diseases of the myocardium, endocardium, heart valves, and heart vessels, and metabolic disorders, can cause HF.[3] Common signs and symptoms of advanced HF include dyspnea, fatigue, exercise intolerance, unintentional weight loss,

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refractory volume overload, hypotension, and signs of inadequate perfusion (diminished peripheral pulses or worsening renal function). A thorough patient history and a physical examination, blood tests, chest radiography, electrocardiography, transthoracic echocardiography, and exercise testing are evaluation procedures used to diagnose HF.[4]

Treatment of HF is aimed at 2 goals: reduced morbidity by reducing severity of symptoms, improving health-related quality of life and functional status, slowing disease progression, and decreasing the risk of hospitalization, and reduced mortality.[5] Treatment of HF includes management of the cause of HF and its associated conditions, monitoring, preventive care, coordinated care, lifestyle modification, guideline-directed medical therapy and cardiac therapy, an implantable cardioverter-defibrillator, and mechanical circulatory support through ventricular assist devices and heart transplant.[4-6] For many patients with advanced HF who become persistently symptomatic, notably those categorized in New York Heart Association functional class IV (HF refractory to optimal guideline-directed medical therapy and surgical therapy), heart transplant is the treatment of choice.[7]

The detrimental effects of prolonged low mobility result in severe, widespread physical deconditioning that affects multiple organs and systems.

At our medical center, patients with advanced HF who are awaiting a heart transplant are admitted to the cardiac intensive care unit (CICU) for pulmonary artery catheter monitoring, continuous intravenous inotropic infusions, and mechanical circulatory support.[8] Patients stay in the CICU for a few days or a few months before transplant. During the waiting period, these patients are prone to suboptimal mobility.[8]

General weakness and being tethered to mechanical circulatory support machines (eg, an intra-aortic balloon pump [IABP] or a temporary ventricular assist device), electrocardiographic monitoring, a pulmonary artery catheter, and intravenous infusion pumps contribute to decreased patient mobility in the CICU.[8] The detrimental effects of prolonged low mobility result in severe, widespread physical deconditioning that affects multiple organs and systems. In the critical care setting, patients can lose up to 30% of muscle mass within 10 days of admission and up to 15% of their muscle strength in 3 to 5 weeks.[9,10]

With prolonged decreased mobility—that is, within the first month of bed rest—stroke volume is reduced by 30%; this reduction is associated with an increase in resting heart rate.[11] Signs of orthostatic intolerance can develop within 72 hours of inactivity.[12-14] In patients with advanced HF, Q waves, ST and T wave abnormalities, tachycardia, new-onset atrial fibrillation, or ventricular tachycardia could cause symptoms of advanced HF to worsen.[4] The decrease in respiratory capacity that results from the deconditioning of respiratory muscles, preventing full expansion of the chest wall during inspiration, can lead to the development of atelectasis and an increased likelihood of respiratory complications such as pneumonia.[10,12] Additional complications associated with prolonged low mobility include a significant risk of developing decubitus ulcers, especially in poorly perfused older adults with HF, orthostatic hypotension, and thrombogenic events.[13]

Depression is common among patients with HF, and this condition could also affect their prognosis. In the study Heart Failure: A Controlled Trial Investigating Outcomes of Exercise Training (HF-ACTION), investigators administered the Beck Depression Inventory II to 2322 patients.[15] They concluded that exercise modestly improved depression scores at 3 months.

Patients must be mobilized while waiting for a donor heart in the intensive care unit (ICU).[8,16,17] Cardiologists at our institution have developed a novel approach to mobilize patients awaiting heart transplant: insertion of a percutaneous IABP in the left axillary-subclavian artery.[8] This procedure is performed in the cardiac catheterization unit.


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Patients with an axillary IABP are safely mobilized daily in our CICU.[8] New nursing protocols and standard practice guidelines focusing on patient ambulation were created to align with the care required by patients with an axillary IABP awaiting heart transplant.[18] One registered nurse helps stable patients with an axillary IABP to ambulate; the nurse spends about 5 minutes preparing the patient and disconnecting IABP cables, infusion pumps, and monitoring equipment.[19] We explored the idea of obtaining fitness trackers for these patients to use while ambulating, and we decided to use funds from a Nursing Innovation Award to acquire 43 fitness trackers for this study.

## Methods

### Recruitment and Sample

We obtained approval from our center's internal review board before the start of the study. From April through October 2017, we randomly selected patients to receive a Fitbit on the basis of various inclusion criteria: patients had to be awaiting heart transplant in the CICU; have orders to ambulate; speak English; have an active email address; and have access to a smartphone, tablet, or laptop computer. (Patients would use these devices to enroll in the established Fitbit group for patients awaiting heart transplant in our CICU.) Patients could be recruited as soon as they were placed on the heart transplant list with a 1A designation according to the 2017 heart transplant categories from the United Network for Organ Sharing.[20] The 1A designation is the status code given to transplant candidates with the highest priority on the waiting list on the basis of medical urgency.[20]

Potential participants were approached in the afternoon, when patients rested and no activity was scheduled. The principal investigator (F.M.) or members of the study team met with potential participants and informed them about the study, reviewed the informed consent form, and explained the risks, benefits, and alternatives. A total of 43 patients voluntarily agreed to participate, and written informed consent was obtained from each participant.

### Fitness Tracker

In this study we used the Fitbit One fitness tracker (Fitbit, Inc.), which "tracks steps, floors climbed, distance walked, calories burned, motivational messages and active minutes."[20] It can be clipped to the patient's gown or clothing and has a 14-day battery life. Patients' statistics could be automatically downloaded and synchronized to a smartphone, a laptop computer (with an adapter provided with the Fitbit), and other smart devices.[20]

Once a patient agreed to participate, they were issued a new Fitbit One,[21] and they were given a hard copy of the Fitbit One manual and the CICU Patient Guidelines for the Fitbit Project. The study team made patients aware that the Fitbit One tracks the distance and number of steps walked, calories burned, number of stairs/floors climbed, and time of day, and provides motivational messages. They taught patients the importance of keeping the device charged at all times. Patients were to wear the device during waking hours everyday. Patients also were to remind the nurse to record the distance/steps walked in their electronic medical record at the end of shift (6 PM). The patients were also told that the Fitbit is theirs to keep, but it would not be replaced if lost. The study team established a Fitbit group for the study participants and assisted patients in registering for the group. A member of the research team addressed all patients' questions about the project and the fitness tracker, and study team members followed up with patients weekly to resolve any problems with or questions about the Fitbit and its use.

In one-on-one sessions with the nursing staff, the study team also provided instructions and a printed copy of the CICU Nurse Guidelines for the Fitbit Project. These guidelines included instructions on what and where to document in the electronic medical record, and to make sure that the patients put on the Fitbit as soon as they are out of bed in the morning. The instructions also reminded nurses that patient participation was voluntary. A printed copy of the nurse guidelines was posted by the patients' room doors for easy reference.

In one-on-one sessions with the nursing staff, the study team also provided instructions and a printed copy of the CICU Nurse Guidelines for the Fitbit Project.

### Interviews

Our goal was to recruit 5 to 10 participants for interviews from among our group of 43 patients wearing a Fitbit; we selected 8 participants. We chose to interview only 8 participants because at that number we reached saturation in the exhaustive descriptions of patients'

**Table 1** Patient interview guide

1. Tell me about your feelings when they gave you a Fitbit.
   a. Have you previously heard about Fitbit or any other activity tracker?
   b. Do you know what the Fitbit is used for?
2. Describe your reaction when the nurse provided you with the Fitbit. What are some of your feelings when you walked using the Fitbit?
   a. Did you feel any changes in your body (physical, emotional, or other changes)?
   b. How is your sleep at night?
3. What kind of activities do you do with the Fitbit while in the hospital?
4. Tell me about your ability to be active at home before you were admitted to the hospital.
   a. Did you have a regular exercise routine at home, despite your heart failure?
   b. Did you use any activity tracker, such as Fitbit? If so, how was it working for you?
5. Why do you think it is important to be active even though you have heart failure?
6. What do you think of the Fitbit as a measuring device for walking?
   a. In your own words, what is the benefit of using a Fitbit?

experiences with using a Fitbit as an ambulation device. All 8 participants were interviewed after 2 to 3 weeks of wearing the Fitbit One tracker. In a qualitative study, saturation occurs when adding more participants does not add any additional perspective or description to the findings.[21,22]

**Interview Guide.** Semistructured in-depth interviews are the most widely used interviewing method for qualitative research, and we used this format in this study. In qualitative research, questions are not "validated"; rather, the questions aim to elicit responses about the participants' experiences and perceptions. Questions are often open-ended to elicit answers about the "what," "how," or "why" of a phenomenon (in this case, wearing a Fitbit), rather than "how many" or "how much," which are answered through quantitative methods. This method requires a set of predetermined open-ended questions that gives the interviewer an opportunity to further explore particular responses through other emerging questions.[23] Open-ended questions are a versatile tool that allow the interviewer to delve deeply into the phenomenon of interest, in this case the use of a Fitbit, while encouraging the interviewee to share rich descriptions of their lived experiences of the phenomenon.[23,24]

We created a semistructured interview guide for use during the individual interviews (Table 1). The interview guide had 6 questions, which we created to help us understand how the participants perceived their experience using the Fitbit during ambulation.

**Data Collection.** Data collectors were trained on how to interview the participants. Each interview was conducted in the patient's room while they sat in a chair or laid in bed, and each lasted approximately 30 to 60 minutes. All participants tolerated the length of interview without difficulty. With permission from the participants, we audiotaped the interviews to allow us to create and confirm written transcripts.

The interviewers asked participants the questions from the semistructured interview guide (Table 1). They would be deliberately silent as needed to allow participants to reflect and elaborate on their viewpoints. This process allowed the interviewers to gain an in-depth understanding of the patients' use of the Fitbit.

**Data Analysis.** We used the Colaizzi method of data analysis, which consists of 9 steps: (1) describe the phenomenon of interest (in this case, patients' experiences using a Fitbit during ambulation); (2) collect participants' descriptions of the phenomenon; (3) read all participants' descriptions of the phenomenon; (4) return to the original transcripts and extract significant statements; (5) spell out the meaning of each significant statement; (6) organize the aggregate formalized meanings into clusters of themes; (7) write an exhaustive description of the phenomenon; (8) return to the participants for validation of the description; and (9) if new data are revealed during the validation, incorporate them into the exhaustive description.[25]

To enhance the credibility of the findings, one research team member (F.M.) returned to the informants (via email and regular mail) to validate the findings. We used purposive sampling so we could maximize the range of specific information about the experience. For transferability, the principal investigator collected detailed data to report with sufficient detail and precision. To enhance the dependability of the study, a team member with a PhD (R.B.) who is experienced in phenomenological methodology examined the transcripts, interpretations, and recommendations, and attested that the findings were supported by the data and were internally coherent. To address confirmability, we preserved an audit trail

(available upon request) to support any inquiries about the conclusions, interpretations, and recommendations and to trace them to their sources.[25]

We analyzed the data through 7 steps: interviews, significant statements, formulated meanings (across the group, based on the interview structure), themes, theme clusters, exhaustive description of the phenomenon, and a return to the participants to validate the description.

Each research team member read each transcript numerous times during simultaneous replay of the audio recording of the interview to capture the study participant's feelings, tone of voice, and disposition as they expressed their feelings about their experiences with the fitness tracker as an ambulation-measuring device. The researchers extracted significant statements and phrases from each question and coded them. Significant statements or phrases have imparted meanings, which we called "formulated meanings."

## Results

The demographics of the interviewed participants are shown in Table 2. Using the Colaizzi method, we identified 361 significant statements during the interviews, which yielded 224 formulated meanings. We grouped the formulated meanings on the basis of the interview questions, and 16 themes emerged. We then grouped these themes into 4 clusters to describe the phenomenon—the experiences of patients awaiting heart transplant who used the Fitbit One fitness tracker as an ambulation device.

The hospital ICU setting is usually not equated with patients being happy and excited. Patients undergo painful procedures, blood draws, and invasive and noninvasive tests almost every day. Thus, the first cluster of themes identified from the patient interviews—happy, excited—was somewhat surprising (Table 3). The participants indicated that they were happy to receive the fitness tracker because they felt that it would be beneficial to them and other patients with the same condition (HF), as it would challenge and motivate them to walk. One participant responded that the fitness tracker did not make him feel anything; he wanted it only to satisfy his curiosity.

The second theme cluster was that the fitness tracker motivated and challenged the patients to walk more. These patients are debilitated and weak from HF by the time they are placed in category 1A on the heart transplant list. They require increased motivation to enhance ambulation. When these patients were given a fitness tracker, they became more motivated to walk and mobilize (Table 4). The Fitbit One has an organic light-emitting diode display on which the patients can see the number of steps that they walked that day. This display, which the patients can easily access, is one reason they cited for being more motivated. The patients also cited a desirable secondary benefit from walking: better sleep at night.

The third theme cluster was that the fitness tracker was beneficial as an ambulation-measuring device (Table 5). The patients expressed a sense of achievement while using the fitness tracker in this capacity. They further expressed that the fitness tracker motivated them to increase ambulation each day and set new personal goals, which actively engaged the patients in goal setting as it pertained to their plan of care. Reported benefits included better sleep, increased stamina, and feeling stronger. One

**Table 2** Demographic characteristics of the participants interviewed

| Characteristic | No. of participants[a] |
|---|---|
| Age, y, mean (SD) | 61.75 (3.4) |
| Gender, No. | |
| Male | 7 |
| Female | 1 |
| Body mass index,[b] kg/m$^2$, mean (SD) | 28.4 (5.1) |
| Race, No. | |
| White | 4 |
| Black | 4 |
| Comorbidities, No. | |
| Amyloidosis | 2 |
| Chronic kidney disease | 6 |
| Cardiomyopathy | 5 |
| Diabetes | 4 |
| COPD, pulmonary hypertension | 5 |
| Heart failure (NYHA class 3b-4) | 8 |
| Vasoactive infusion, No. | |
| Milrinone | 6 |
| Dopamine | 1 |
| Dobutamine | 1 |
| Oxygen, No. | |
| Room air | 8 |
| Nasal cannula 1-4 L/min | 0 |
| Patients with circulatory support, No. | |
| Axillary intra-aortic balloon pump | 4 |
| PAC and vasoactive infusion | 4 |

Abbreviations: COPD, chronic obstructive pulmonary disease; NYHA, New York Heart Association; PAC, pulmonary artery catheter.

[a] Unless otherwise indicated.
[b] Body mass index calculated as weight in kilograms divided by height in meters squared.

**Table 3** Significant statements and formulated meanings for theme cluster 1: happy/excited to get a fitness tracker

| Significant statements | Formulated meanings |
|---|---|
| I was excited about [it]; I never had one and I was really excited about it. It made me feel like I am accomplishing something. I felt pretty confident with myself with the Fitbit. I felt I had a challenge. | The patient was excited about receiving the fitness tracker and thought of it as a challenge. |
| I know it's a great tool in keeping up with your activity. I am glad to get it because I wanted to track my steps every day. | The patient was happy to receive the fitness tracker to use to track his steps every day. |
| I was pretty happy to participate in the study to assess whether or not to exercise, [which] will benefit people with a heart condition such as myself. | The patient felt happy; he thought the fitness tracker would help to increase exercise, which would benefit other patients. |
| I was pleased to be a part of the study. I had a Fitbit at home but I stopped using it when my heart was failing. I didn't exercise much, but now I enjoy it. | The patient was happy to have the fitness tracker; he felt that participating in the study was important for him and for subsequent patients. He had used a fitness tracker before but had stopped because of his deteriorating condition. |
| I felt like I won the lotto; I was happy and I said why not. . . . I was excited, with the purpose of how I could benefit from it. | The patient was excited to take part in the study and to benefit from it. |
| It was good for motivation and [to] get me to walk. I was happy and glad to participate. | The patient was happy to participate. |

**Table 4** Significant statements and formulated meanings for theme 2: motivated/challenged to walk more

| Significant statements | Formulated meanings |
|---|---|
| It made me feel like I am accomplishing something. I felt pretty confident with myself with the Fitbit. I felt I had a challenge. | The patient felt that he was accomplishing something; using the fitness tracker gave him self-confidence. |
| When I am walking with the Fitbit, I make sure that I double the amount of steps that I [take] each day. | Seeing the numbers on the fitness tracker motivated the patient to double the number of steps walked each day. |
| Emotionally, I was reaching small goals—from the first time being just to walk around the corridors to the last time I walked half a mile . . . down various corridors. | Walking helped the patient both physically, to maintain or build muscle mass, and emotionally, to reach small goals, with a progressive increase in walking distance, and made him feel good and relaxed. |
| I don't even think about it . . . actually I think about it when I get back to the room and I press the button and yay!, I got a bunch of steps. I was happy about it. I know it's counting my steps and the next day I want to count more step[s] than the day before, so it has value. | The fitness tracker is a motivator. The patient only thinks about it when he gets back to his room and looks at the numbers. He wants to outdo himself and thus walks more the next day. |
| Fitbit doesn't really change anything but it . . . allows me to push forward because what I want to do is achieve every day a little bit further, so the Fitbit gives me that information every day. | The fitness tracker motivates the patient to walk more; the patient accomplishes a little bit more every day because of the information on the Fitbit screen. |
| I mean I could hardly tell [I had] it on. I sleep better I guess. It was the walking that did it; I don't think Fitbit had anything to do with it. It's the walking itself that the Fitbit encouraged me to do. You know the walking helped me to sleep better. | The fitness tracker is small and nonintrusive and the patient hardly notices he is wearing it; the device motivates the patient to walk. |
| I was really excited about it and it made me feel like I was accomplishing something. I sleep pretty good considering that we are in the hospital. | The fitness tracker served as encouragement to walk more each day; the patient was more relaxed after walking. |

patient stated that improved strength could benefit them during the postoperative recovery process. This statement reflects the main purpose of increasing patients' ambulation before heart transplant.

The fourth theme cluster was that the fitness tracker had the potential to benefit future patients requiring a heart transplant (Table 6). Our participants appreciated the use of this common technology as a complement to

**Table 5** Significant statements and formulated meanings for theme 3: the fitness tracker and walking are beneficial

| Significant statements | Formulated meanings |
|---|---|
| I just have it on when I go to the bathroom or when I do exercises in the bed. The only other time is when I walk and I use the Fitbit faithfully. | The patient used the fitness tracker while walking and exercising. |
| [I walk] for the most part because I have a balloon. I have to stop doing the exercises that I was doing for my upper body and abdominal area. My activities are primarily cardiovascular. | The patient used the fitness tracker when walking for cardiovascular exercise; the patient used to do upper body and abdominal exercises but stopped because of illness. |
| I've done some exercises that the physical therapist taught me to do. I've got a paper with I think about 10 different exercises that I could do even with restrictions for my arms because I have the heart balloon. | The patient used the fitness tracker when doing physical therapy exercises and when walking. |
| I'm tethered to the heart pump and I can only walk and I need to have a nurse with me. . . . I started with 695 steps . . . but I'm up to—my highest I think is 5000 steps, but I'm going to beat that today. This is [a] motivator; you really want to take one more step than you did yesterday. If you are a competitive person like me. | The patient required assistance from a nurse when walking. Using the fitness tracker, he was motivated to walk more each day than the day before; the fitness tracker inspired a sense of competition. |
| I walk and also I have an exercise bike [and] I use that. . . . I have weights that I use periodically so I use that with any type of exercises that I do. I do strengthening exercises and whatever exercises I do in the room, I have the Fitbit on. | The patient used the fitness tracker for all strengthening and endurance exercises in the room and for walking. |
| I mainly just walk the floors and I do several exercises that the therapist told me. I do leg exercises, squats, and marching in place and going up and down on my tiptoes. | The patient wore the fitness tracker for walking and doing exercises. |
| I think that the exercise does help. It relieves some tension and stress, so I do think that it [the Fitbit] helps. | The exercise and walking lessened stress and tension. |
| It is important because you want to have strength when you get your heart transplant. I think it will help my recovery 100%. | The patient emphasized the importance of maintaining strength before transplant and noted that regular physical exercise will aid in recovery after transplant. |
| I think it's important to have this Fitbit for tracking your steps every day and then it helps motivate you to stay strong. Because your other body parts contribute to the workout and endurance so that you don't have atrophy in legs and arms, upper body and lower body. | The patient believes the use of the fitness tracker helped to inspire him and that walking helped him to stay strong. The patient believed that exercising increases endurance and prevents loss of muscle tone. |

**Table 6** Significant statements and formulated meanings for theme 4: use of technology like the fitness tracker has potential for other patients awaiting heart transplant

| Significant statements | Formulated meanings |
|---|---|
| I could imagine that for others it would provide motivation that they don't intrinsically have or had before getting the Fitbit. | The fitness tracker served as a motivational tool to the patient, and the patient felt it would also benefit others. |
| My wife has one and tracks it on her phone and it's kind of fun when we compare what we had done. | The fitness tracker dares the patient to exercise and walk more each day; the patient has fun comparing his progress with that of his wife. |
| At the website, you can see and reference back to others [Fitbit group members]; [it] gives you the summary of what you have done compared to them. | The fitness tracker helped in goal setting and the dashboard served as an avenue for socializing with his family and other group members. |
| I was pretty happy to participate in the study to assess whether or not to exercise; if that is the case, [it] will benefit people with a heart condition such as myself. | The patient felt that the fitness tracker will help other people with the same heart condition. |

their physical activity and as a device for socializing with other patients and family members through the CICU pre–heart transplant Fitbit group.

## Discussion

Studies have shown that long hospital stays and bedrest have deleterious effects on multiple organs. Patients

awaiting heart transplant in the CICU are especially vulnerable to these effects because of their low cardiac output, which results in shortness of breath and poor multiorgan perfusion. In addition, patients are tethered to monitoring equipment, infusion pumps, and mechanical assist devices that support their heart but limit their mobility while they wait for a heart transplant. Early and consistent ambulation for these patients thus becomes a problem. Motivating these patients to walk despite these problems is important.[26,27]

Multiple quantitative studies have shown that using step counters in cardiac rehabilitation and telerehabilitation can assist in patients' recovery.[28-30] We found no qualitative studies focusing on how patients feel about using a fitness tracker in an ICU setting, so in this study we focused on examining the experiences of these participants. The fitness tracker enabled the patients to access real-time data as they walked, after walking, or at the end of the day, when they could see their total number of steps and distance walked. They could then determine whether, depending on their physical condition, they could increase their number of steps the next day. The fitness tracker complements the physical therapy plan of care presented to the patients at the start of their physical therapy treatment.

Some of the participants believed the fitness tracker, as an ambulation device, could help future patients to be active while waiting for a heart transplant.

## Limitations

Limitations of the study include that it was a single-institution study with predominantly male interviewees (7 of 8 participants). Of the 8 participants interviewed, only 5 responded to verify the research findings. One respondent who verified the findings commented that the Fitbit fitness tracker is not as accurate as another activity tracking device he began using after his discharge home, suggesting that different brands of activity trackers have varying degrees of accuracy. Another limitation is that the participants might subconsciously be trying to please us because we gave them a free Fitbit One. Despite these limitations, with the information gathered from this qualitative study, we can identify variables that could lead to the development of a quantitative study, such as measuring postoperative mean extubation times, mean time of first ICU ambulation after transplant, total postoperative ICU length of stay, and total postoperative hospital length of stay.

## Conclusions

This study exemplifies the application of inexpensive, modern, commercially available technology as a complement to traditional care for patients awaiting heart transplant in the ICU. This study could lay a foundation for future studies of the benefit of a fitness tracker in encouraging ambulation not only for patients with HF but also for chronically ill patients who require prolonged hospital stays.

Overall, the participants had a favorable experience with the fitness tracker as an ambulation device. Those we interviewed claimed that using the fitness tracker provided benefit in their ambulation activity. They were happy to get a fitness tracker, and it motivated them to walk more and stay active. Because the participants were active during the day, they slept better at night, and their stamina increased. They felt stronger, and they believed this increased strength would be helpful during their postoperative recovery. Some of the participants believed the fitness tracker, as an ambulation device, could help future patients to be active while waiting for a heart transplant. CCN

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Financial Disclosures
None reported.

## See also

To learn more about heart transplant, read "Electrocardiographic Correlates of Acute Allograft Rejection Among Heart Transplant Recipients" by Hickey et al in the *American Journal of Critical Care,* 2018;27(2):145-150. Available at **www.ajcconline.org**.

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