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Using welfare technology for individuals with intellectual disabilities. Expectations, experiences, and challenges of intellectual disability nursing students during clinical placement

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ABSTRACT

Purpose: Little is known about how welfare technology (WT) is used in welfare services for people with intellectual disabilities. This study aimed to explore expectations, experiences, and challenges concerning the use of WT for people with intellectual disabilities among bachelor-level intellectual disability nursing students during clinical placement.

Materials and methods: A written reflection assignment (four open questions about using WT) was collected from 100 intellectual disability nursing students (30 males, 70 females). Four focus group discussions were also performed with 13 intellectual disability nursing students before and after their clinical placements.

Results: Analysis of the assignments showed that “security and safety” technology was the most frequently used WT category for people with intellectual disabilities in the clinical placement settings in municipal welfare and day services. The students reported “Compensation and wellness” technology as the top category to promote the quality of services for people with intellectual disabilities. However, people with intellectual disabilities mostly used WT for “Social contact”. Students were mainly positive towards WT and believed it could improve the service quality and the everyday lives of this group. However, the students requested to learn more about WT and ethical issues regarding WT before clinical placement. Additionally, they experienced a lack of knowledge, focus, and awareness about technology in services for this group.

Conclusion: The findings suggest that although intellectual disability nursing students have a positive attitude towards using WT for people with intellectual disabilities, they require more skill training and ethical knowledge before entering clinical practice.

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Intellectual disability; education; clinical practice; assistive technology; intellectual disability nursing



► IMPLICATIONS FOR REHABILITATION

- Students were mainly positive towards welfare technology and believed that it could improve the service quality and the everyday lives of people with intellectual disabilities.
- Before their clinical placement, intellectual disability nursing students requested to learn more about welfare technology and ethical issues regarding welfare technology.
- “Security and safety” technology was the most used category for people with intellectual disabilities in the municipal welfare and day services.
- “Social contact” technology was the most used category by people with intellectual disabilities.

Introduction

Modern healthcare systems include using new technologies to support treatment, delivery of care, daily activities, and participation for different groups [1]. The proportion of the ageing

population is growing, whereas the proportion of the working population is declining. To tackle this challenge, there has been rising interest in utilizing welfare technology (WT) to improve the quality of life of people with disabilities and the elderly [2–5]. In Norway, WT is usually defined as “technological assistance that

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contributes to increased security, social participation, mobility, and physical and cultural activity, and strengthens the individual's ability to manage himself in everyday life despite illness and social, psychological, or physical impairment" [6]. WT is an umbrella term including technologies from low tech to high tech; for example, technology for security, information and communication technologies (ICT), and telecare services [7]. Outside of Scandinavia, WT is often referred to as "assisted technologies" [7] or "active and assisted living technologies" [8]. WT helps save time, cost, and personnel; it also enhances independence, quality of life, and health management in everyday life [9–11].

WT is considered a right, and all people with disabilities should have equal access to WT. The United Nations Convention on the Rights of Persons with Disabilities (CRPD) points to the importance of undertaking or promoting research and development and promoting new technologies for persons with disabilities. Previous studies have mainly investigated WT for the elderly [3,12], and other groups have received little attention despite their needs [13].

The main aim of service provision for people with intellectual disabilities is to maximize their independence, empowerment, and social inclusion [14]. Although there are some initiatives, using WT for people with intellectual disabilities has been overlooked in both practice and research [6,15]. Initiatives have mainly focussed on technologies for alarms and sensors, localization, communication, and sharing information between different actors [16]. Previous research has explored mostly the usefulness and relevance of WT for people with intellectual disabilities [10,17–21]. Healthcare staff are often essential agents in the lives of people with intellectual disabilities, and their perceptions and experiences of using WT are important [19,22]. However, little is known regarding the actual implementation of WT by healthcare staff for people with intellectual disabilities.

Sharing and applying existing knowledge regarding WT is crucial to care and support people with intellectual disabilities [23,24]. Moreover, disseminating research and practice-based WT knowledge is essential for the future of the intellectual disability nursing profession [25]. The field of practice needs future intellectual disability nurses who can support and meet today's technology-related changes in healthcare services. However, few empirical studies have documented such outcomes (i.e., level of knowledge and skills among this health professional group) in practice and education [4]. Accordingly, practical and updated information is needed regarding clinical WT-related knowledge for intellectual disability nursing students in their undergraduate education and training. Therefore, the current study aimed to investigate expectations, experiences, and challenges concerning the use of WT for people with intellectual disabilities among intellectual disability nursing students during clinical placement. We also aimed to outline the types and utilization of WT observed by students in the context of welfare and day services for/by people with intellectual disabilities to find out the potential opportunities of WT.

Methods

This study was performed at the intellectual disability undergraduate nurse education at the Norwegian University of Science and Technology. The Intellectual Disability Nursing programme is a three-year bachelor's degree, including medical, social, and pedagogical subjects, for educating qualified health professional personnel to work with individuals with different disabilities. The primary purpose of this education is to educate professionals

who can contribute to social inclusion and increased quality of life for people with intellectual disabilities. In the current study, we used a qualitative design, and data collection strategies comprised of two separate parts: (1) focus group discussions on exploring expectations, knowledge, and experiences among intellectual disability nursing students regarding the use of WT for people with intellectual disabilities during their clinical placement. (2) Written reflection assignments were also collected to outline the types and utilization of WT observed by students in the context of welfare and day services for/by people with intellectual disabilities.

The study context was 86 different clinical placement settings, whereas 57 were modified housing units, seven were day services, seven were child auxiliary housing, and 15 were primary schools with their own units for children with intellectual disabilities. The clinical placement settings were part of the Norwegian welfare and day services and represented specialized public services for people with intellectual disabilities who required activity services and/or modified housing. All clinical placement settings were in mid-Norway. The characteristics of the people with intellectual disabilities were not registered; however, the variety and extent of functional level and impairments were from needing guidance in everyday activity to being dependent on health care personnel in all aspects of everyday life. All participants received information about the study and that the data would be handled confidentially. Informed written informed consent was obtained before participation. The study was approved by the Norwegian Centre for Research Data (ID: 45471).

Written reflection assignment

A total of 100 first-year students (30 males and 70 females) participated in this study. All students were studying intellectual disability nursing at the Norwegian University of Science and Technology and had a mandatory 12-week clinical placement in one of the 86 welfare and day services (mentioned above) in spring 2018. Students were asked to keep a reflection log during the clinical placement period to reflect on events and episodes related to the use of WT for people with intellectual disabilities. WT can be used in many contexts and for different purposes. We used the categorization of WT for the municipal health and care services published by the Norwegian Directorate of Health [26]. It divides WT into four different categories: (1) security and safety technology to assist in creating a safe environment for individuals' lives and management of their health; e.g., security alarms; (2) Compensation and wellness technology to help in conditions of memory or physical failure, e.g., electric wheelchair; (3) Technology for social contact like video communication technology; (4) Technology for treatment and care, e.g., automatic measurement of blood sugar and blood pressure [26]. Students were asked to write a reflection assignment with four open questions about using WT to outline the types and utilization of WT in their clinical placement settings (Table 1). The questions were as follows: (1) What WT is available during your clinical placement? (2) In your opinion, which WT solutions could possibly be of use in the clinical placement? (3) What technological solutions do you envisage helping to promote the quality of life of the service recipient? (4) Do you know if service recipients have used WT on their own? If so, what kind of technology? The students uploaded their completed assignments to the university's learning platform (Blackboard) at the end of the clinical placement period. The written assignments were used to provide updated information about

existing WT in welfare and day services for people with intellectual disabilities.

Focus group discussion

Focus group discussions were conducted to investigate the student's expectations, experiences, and challenges regarding the use of WT in the context of welfare and day services for people with intellectual disabilities. Focus-group discussion was chosen to understand how informants discuss and interpret the topics of interest in their own words through communication with each other [27]. The students were recruited by announcement at the university's learning platform, where they also received information about this part of the study. They were informed that participation was voluntary, they could withdraw from the study, and the collected data would be treated confidentially. Written informed consent was obtained before each interview. Thirteen students volunteered to participate in the interviews. The students were placed across different clinical practice settings, mostly in residences for people with intellectual disabilities. In total, four focus group discussions with 3–4 informants were conducted, two in the first week and two after completing the 12-week clinical placement period. Two researchers conducted all interviews, and each interview lasted 60–90 min and was recorded and transcribed verbatim. The interviews took place at the student's campus. A semi-structured interview guide was applied. Informants were informed about the main themes and encouraged to reflect on their thoughts and experiences.

Examples of questions included: "What expectations do you have about WT where you have your clinical placement?" "What challenges do you see with the use of WT?" "How were WT solutions used in your clinical placement?" "What have you learned about the use of WT during clinical placement?" "What is your current opinion towards WT as compared to before the clinical placement?"

Data analysis

Thematic content analysis was applied to analyze the reflection assignments; to describe the types and utilization of WT observed by students in the student's clinical placement settings. The analysis was divided into five steps, and the first three steps were performed for each assignment [28]. Initially, we reduced the texts to thematic units. Second, the units were arranged in different categories that organized the texts. Then, we completed different categories with content by extracting quotations from the assignments to illuminate the meaning of the categories. In the next step, we compared the assignments regarding similarities and differences. In this process, new categories appeared. The last step was to search for all possible explanations and to connect those to the questions. We used the categorization of WT for the municipal health and care services published by the Norwegian Directorate

of Health [26]. It divides WT into four different categories: (1) security and safety technology to assist in creating a safe environment for individuals' lives and management of their health; e.g., security alarms; (2) Compensation and wellness technology to help in conditions of memory or physical failure, e.g., electric wheelchair; (3) Technology for social contact like video communication technology; (4) Technology for treatment and care, e.g., automatic measurement of blood sugar and blood pressure [26].

A constant comparative analysis method was chosen to analyze the focus-group discussions [29]. The authors did the initial coding separately and discussed and accomplished focussed coding together during several meetings. The authors regularly returned to the transcribed interviews to ensure that the interpretations were true. Two of the authors performed the final part of the focussed coding analysis. The focussed coding process was discussed with the research group. An example from the analysis process is illustrated in Table 1.

Results

Reflection assignments

For the first part, 100 assignments were analyzed. Table 2 shows the results of thematic content analysis on the collected assignments. Analysis of the assignments revealed that various types of WT were being observed and utilized in the clinical placement settings. "Security and safety" followed by "Social contact" were the most frequently used WT categories in the municipal centres of welfare and day services for people with intellectual disabilities. The students experienced that "Compensation and wellness" followed by "Security and safety" were the categories that enhanced the quality of services for people with intellectual disabilities. The students experienced that the service users (i.e., people with intellectual disabilities) most often used WT for "social contact".

Table 2. Students' reflections ($n = 100$) on using welfare technology during clinical placement for people with intellectual disabilities in welfare and day services.

Question	Security and safety	Compensation and wellness	Social contact	Treatment and care
1	180	101	122	46
2	48	40	38	16
3	50	72	43	6
4	8	22	35	2

(1) What welfare technology is available during your clinical placement? (2) In your opinion, which welfare technology solutions could possibly be of use in the clinical placement? (3) What technological solutions do you envisage helping to promote the quality of life of the service recipient? (4) Do you know if service recipients have used welfare technology on their own? If so, what kind of technology?

Table 1. Example from the analysis process.

	Subcategory	Category
"There was one person that had attended a course about that (WT), but then he quit the job, and using WT stopped then."	Individual engagement	Dependency on staffs' knowledge and interest
"(...) I didn't know that that machine (communication aid) even existed when I worked there. And then I suddenly discovered it in a drawer, and then I found out that, hello, we can use this."	WT is not used	
And the staff was very (...) interested in getting more WT, but as NN said, it was a bit challenging to know what was available simply because you didn't know. What exists on the market? So yes.	Lack of knowledge	

WT: welfare technology.

Focus group discussion

How the students' expectations were met

Some of the students reported that they did not have any particular expectations before the clinical placement, while others expected to get more ideas about which WT is available. The students were generally positive towards WT, and they wanted to learn more. The students had expectations of increasing their knowledge about WT and communication options during their clinical placement:

For example, "(...). And it is expected that I should get more ideas about what could be done... in particular about communication... because there are huge challenges in communication, it is nearly non-existing. And then it is like, there has to be some "stuff" that can fix that."

Other students experienced that the use of WT was almost absent

"I am actually very surprised how little there is... because I haven't seen anything but a hearing device."

A need for more education

The students wanted more information about WT, a finding that persisted after the clinical placement. There was also a need to learn more about the residents' rights and how to apply for WT on behalf of a resident. Furthermore, the students expressed the need for more practical training on the use of various WT devices at the university. One student had already benefitted from a lecture given at the university before the clinical placement and expressed the following:

"I had hardly thought about it (WT) before we had that lecture. And then I got really, wow, we could have done a lot at the place I work, because there is a lot that could develop... for instance, get a proper wheelchair so you can go on a real walk instead of having to push because you can't get uphill again (short laughter). That can be improved, so it is sad that I haven't thought about this earlier, that there is no talk about this at the place I work. That's for sure."

According to the students, more focus should be on WT in the university's study plans and what is highlighted in the actual teaching.

Dependency on staffs' knowledge and interest

The students reported a significant variation in the staff's level of knowledge and interest. Their impression was that some of the staff were interested in WT, while others were not aware of the topic. Some of the staff felt unsure when handling technological devices. In some cases, this led to the WT not being used. One student experienced a client with severe communication challenges who expressed a desire for communication but was not allowed to communicate optimally.

"(...) I didn't know that that machine (communication aid) even existed when I worked there. And then I suddenly discovered it in a drawer, and then I found out that, hello, we can use this."

Some of the students experienced that the staff had little knowledge about WT but that they were interested in learning more. Moreover, the use of WT depended on the staff's interest in WT, who had gained information and knowledge on their own initiative. The responsibility for using WT was not formalized within the centres, which negatively affected the long-term focus on WT. One student expressed:

"There was one person that had attended a course about that (WT), but then he quit the job, and using WT stopped then."

Lack of educated staff (i.e., intellectual disability nurses), high staff turnovers, and sick leaves were reported to affect the use of WT. According to the students, less educated staff did not seem to have the same interest in WT compared with others, e.g., intellectual disability nurses. One consequence of the lack of continuity was that the staff felt insecure about whether a client had tested a particular WT device or not.

"So it's a bit like... when the bachelor educated staff is missing, and when there are many changes among the staff... I don't think it seems like a priority to develop such technology then."

"I don't think it was the number one priority to put it that way. Nobody had so much time for such things."

"But they have lived there for years, so I tried to ask if things had been tested, and then they answered don't know, but maybe. So... I don't think the staff have sufficient information about that."

One student experienced that the staff was eager to learn more about WT. However, they felt insecure, had little self-confidence, and thought that the youngers were more able to understand WT. Focus on WT or empowering the staff was not offered by the organization/leaders, so the staff did not know where to start.

"I think... eeh, where I resided, they really wanted more of it, but they didn't have the resources to get knowledge about what things that were available, so I think it's demanding for people to declare - now we are going to spend some time to see what is available."

Some staff were creative and used existing WT to promote independence and coping. In a few cases, the students reported that the staff discussed how they could contribute to the residents' independence by using WT.

"(...) but we have a resident who is finally allowed to shop independently because the staff has audiotaped what is on the shopping list, and then the resident can do the shopping himself and be independent..."

WT has positive and negative implications

The students thought that WT might increase residents' independence and facilitate their everyday lives. A digital day planner was highlighted as a type of WT contributing to the residents' more predictable everyday lives. The students also expressed that WT may allow for more privacy for the residents, which they felt was not optimal today.

"I think that (digital day planner) could have been helpful where I work now. That it could have helped a lot, that they could have got some time off from us. It's not that fun to have someone who interferes all the time to have a helping hand."

WT could increase the feeling of safety/security for the staff and the next of kin when caring for the residents. The students reported several residents who enjoyed taking a walk on their own but also sometimes failed to find the way back home. A GPS was suggested as a WT device that would have helped them, but the ethical dilemma of surveillance vs. security was discussed among the students. They further emphasized that WT should not replace staff and human interactions but that WT instead could provide more free time for staff to interact with residents.

"The residents would like us to come and visit, and we don't have the time because it's a cleaning day, so we have to Hoover or yes. Can lead to more well-being then."

"Yes, and that may free some time for..."

"Having a good time" (quote from 3 students)

Discussion

The profession of intellectual disability nursing requires more research and practice-based knowledge in the current modernization of services [25]. Thus, the current study explored expectations, experiences, and challenges intellectual disability nursing students have regarding the use of WT for people with intellectual disabilities in the context of welfare and day services during their clinical placement. Intellectual disability nurses are key agents of inclusion and developing services for people with intellectual disabilities [30,31]. Their attitudes, skills, and knowledge are crucial for providing a holistic and person-centred approach to service delivery [32]. The findings in the present study indicate that intellectual disability nursing students generally had positive attitudes towards WT and believed that it brings various possibilities to promote the quality of services for people with intellectual disabilities.

Reflection assignments

Analysis of the reflection assignments showed that WT's ability to impact "security and safety" and "social contact" was the most used categories reported by the students from their clinical placements. This finding supports previous reports that alarms and sensors, localization, and ICT are commonly used in WT in the healthcare system [33]. However, the students observed that the service users mostly used WT for social contact. WT is found to improve communication and interaction with others, which is crucial for emotional and social well-being [34], and Ramsten et al. reported that young adults with mild-to-moderate intellectual disabilities use WT for family relationships, daily support, and support for offline activities [35].

"Compensation and wellness" and "security and safety" were reported by the students as the top WT categories promoting quality of services for people with intellectual disabilities. Similarly, a recent study found surveillance and health maintenance devices as the most used sensor technology for the care of persons with visual- or visual-and intellectual disabilities [36]. Previous research has reported that appropriate WT can improve quality of life, daily functioning, and societal activities and facilitate ongoing inclusion efforts in people with intellectual disabilities [9,10,16,18,35,37,38]. Based on the student's assignments, it seems that the services, to a certain extent, had implemented WT to help the residents master their own health and lives.

Focus group discussions

Some students expected to get more ideas about available WT in the service centres, while others had no particular expectations about WT before the clinical placement. In general, the students had positive attitudes towards WT and believed that it brings various possibilities to the everyday lives of people with intellectual disabilities. They also expressed interest in learning more about WT. This finding is consistent with the positive perspective of healthcare staff on using WT in services for people with intellectual disabilities [13]. Previous research has reported that only providing equipment and resources does not automatically result in acceptance and use of WT, and the enthusiasm and attitudes of staff members are crucial factors for successful WT implementation [3,24,39–41]. The role of staff's beliefs and attitudes has also been associated with service quality and staff performance due to a complex interaction of personal, service, and societal values [42].

The students wanted more teaching and skill training in WT before the clinical placement. Thus, preparing students with necessary clinical skills and learning opportunities regarding intellectual disabilities-related needs of WT before clinical placement may be essential. During clinical placement, it seems important that supervisors and staff support and show interest in the student's learning objectives in WT create an optimal educational setting.

The students also suggested that the intellectual disability nurse programme should provide more knowledge about ethical issues and users' rights and how to apply WT on behalf of service users. In line with this finding, previous studies have reported ethical and privacy concerns among healthcare staff, especially when users have no control over their own sensitive information [11,13,19,36]. This issue is mainly related to ICT and monitoring technology [11,43], and it has been recommended that permission should be obtained from service users or their legal representatives [44,45].

The students observed a significant variation in the healthcare staff's interest and knowledge of WT in the welfare and day services. They explained that although some of the staff were interested in using WT for people with intellectual disabilities, others avoided it since they felt uncertain and had little self-confidence in handling new technologies. The students experienced that the services' staff were eager to learn more about WT but empowering the staff was not offered by their organization/leaders. Consequently, the staff did not know how to get the necessary knowledge about WT.

The students reported that interested staff had gained their knowledge on their own initiative, and their organization provided no formal training courses regarding WT. Levels of interest and knowledge among healthcare staff determine whether and what support is given to service users [46–50]. The students also pointed out factors for low use of WT in the welfare and day services, including lack of educated staff, no formal responsibility for WT, and high staff turnover. A significant consequence of these factors was significant variations in the use of WT within the centres. This finding support previous reports that interests and attitudes towards using WT vary among healthcare staff, and they need to receive more organizational training and technical support from their workplace for the use of WT for people with intellectual disabilities [9,13,50,51].

The students discussed the advantages and drawbacks of using diverse WT for people with intellectual disabilities, and they highlighted that it helps increase independence, safety/security, and privacy among this vulnerable group. For example, GPS was considered a helpful WT device but also had an ethical dilemma regarding surveillance. The students were concerned about ethical issues regarding the use of WT. For instance, they believed that new technology should not replace human relations and face-to-face interactions. This is a common concern reported by healthcare staff and different user groups in previous studies [12,13,36,45,52]. Therefore, the students called for more knowledge on ethical issues related to WT provided by the intellectual disability nurse education before the practical placement.

Limitations

The findings of this study should be interpreted with caution due to its limitations. The focus group discussions were performed on a small sample. Also, the student's experiences and perspectives were based on the Scandinavian welfare system. We did not include mentors of students in clinical placement. Further

research is needed to investigate possible ways of encouraging disability nurses and other healthcare staff to facilitate the use of WT for people with intellectual disabilities.

Conclusion

WT is an essential approach to improve services provided by society, and the primary purpose of implementing WT is to help people master their own health and lives better and participate in society. The present study provides practical information on the expectations, experiences, and challenges of disability nursing students using WT during clinical placement for people with intellectual disabilities. The findings indicate a positive attitude among the students but also ethical concerns towards using WT. Intellectual disability nurse education should provide more skill training and ethical knowledge regarding the use of WT for students before entering clinical practices. The students observed the "Security and safety" category as the staff's most used WT, whereas the service users (i.e., people with intellectual disabilities) mainly used WT for social contact. The findings also highlight the need for organizational support and practical WT training for healthcare staff working in welfare and day services for people with intellectual disabilities. We believe it is crucial to build on the student's positive attitudes and enthusiasm towards WT by including education on ethical issues, use of WT, and innovative approaches towards WT in intellectual disability nurse curricula.

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Ethical approval

All participants received written and oral information about the study, and they could withdraw from the study, and the data will be handled confidentially. Informed written consent was collected before participation, and the study was approved by the Norwegian Centre for Research Data (ID: 45471).

Author contributions

All authors were involved in designing the study. LK, VSH, MR, and AEW performed the interviews. VSH, AEW, MR, SA, LS, and LK analyzed interviews and written reflection assignments. OR prepared the original draft. VSH, AEW, MR, SA, LS, and LK revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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