



Public transportation training enhances knowledge and confidence for using the bus among older adults: A descriptive qualitative study

La formation en transport en commun améliore la connaissance et la confiance dans l'utilisation des autobus chez les personnes âgées : une étude qualitative descriptive

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Abstract: Background: Many older adults avoid using public transportation (PT) due to a lack of information and skills. TanGo provides both information and support to tackle this issue. This study investigates the effectiveness of the TanGo training program in assisting older adults in utilizing PT. This study aimed to (1) explore older adults' perceptions and experiences of PT use after completing TanGo, and (2) examine the reasons for not using PT after completing TanGo.

Methods: Participants were recruited using a qualitative design through convenience sampling and semi-structured individual interviews. Thematic analysis using the Consolidated Framework for Implementation Research (CFIR) was conducted.

Results: Ten participants (7 females), with an average age of 82 years, who had previously completed TanGo, reported improved knowledge and confidence in using PT after the program. However, some suggested shortening the program and reducing information overload.

Conclusion: Older adults expressed their satisfaction and increased confidence in using the bus after participating in the TanGo program. The study highlights the importance of adapting this program to external and internal contexts, as well as to the capabilities of the older adults.

Keywords: Public transportation, training, older adults, community mobility, social participation

Résumé : Contexte : De nombreuses personnes âgées évitent d'utiliser les transports en commun (TC) en raison d'un manque d'informations et de compétences. Le programme de formation TanGo fournit à la fois des informations et de l'accompagnement pour résoudre ce problème. Cette étude examine l'efficacité du programme de formation TanGo pour aider les personnes âgées à utiliser les TC. Cette étude visait à (1) explorer les perceptions et les expériences des personnes âgées en matière d'utilisation des TC après avoir suivi le programme TanGo, et (2) examiner les raisons pour lesquelles elles n'ont pas utilisé les TC après avoir suivi le programme TanGo.

Méthode : Les participants ont été recrutés selon un devis qualitatif, par échantillonnage de commodité et entretiens individuels semi-structurés. Une analyse thématique a été réalisée à l'aide du cadre consolidé pour la recherche sur la mise en œuvre (CFIR).

Résultats : Dix participants (7 femmes), âgés en moyenne de 82 ans, qui avaient déjà suivi le programme TanGo, ont fait état d'une amélioration de leurs connaissances et de leur confiance dans l'utilisation du TC après le programme. Cependant, certains ont suggéré de réduire la durée du programme et la surcharge d'informations.

Conclusion : Les personnes âgées ont exprimé leur satisfaction et une confiance accrue dans l'utilisation du bus après avoir suivi le programme TanGo. L'étude souligne l'importance d'adapter ce programme aux contextes externes et internes ainsi qu'aux capacités des personnes âgées.

Mots clés : Transports en commun, formation, personnes âgées, mobilité communautaire, participation sociale.

Introduction

According to the United Nations, older adults aged 65 and over will represent more than 9.6% of the world's population in 2021 (1). In Canada, the number of older adults is growing, with an estimated increase of 25% in 2031 and 28% by 2040 in the province of Quebec (2).

Aging is often accompanied by declining health and mobility limitations (3–7), which may influence how frequently one leaves their home. Not leaving the home can lead to numerous physical and social consequences, such as restricted participation in social, physical, and leisure activities; heightened isolation and loneliness, and reduced overall health and well-being. In fact, according to the World Health Organization, social participation is one of the three pillars of active aging, along with health and safety (8). Age-related factors and associated consequences (e.g., restricted mobility and reduced vision) partially explain why older adults change their mode of transportation and decrease the frequency of their trips (9). Therefore, community mobility often depends on the quality of public transportation services (9).

Public transportation (PT) can enhance independence and quality of life among older adults (9) and may facilitate community participation (e.g., volunteering, participating in community events, and meeting friends) (10). Moreover, PT can help older adults maintain an active and engaged community life once they stop driving a car (9). However, only 4% of older adults use PT (11), which may be partially explained by common physical and social barriers, such as the distance of bus stops from home, waiting times, transfers, lack of shelters and benches at stops (12), or the attitudes of some drivers (e.g., lack of courtesy, sudden acceleration, and braking) (13). Efforts are being made to remove these barriers and make PT more accessible and usable by all people using inclusive approaches. For example, the Réseau de Transport de la Capitale (RTC) has renewed its fleet with more buses that have screens showing real-time stops and clear instructions indicating priority seating for older adults and people with disabilities. Additionally, the number and visibility of bus shelters have increased, protecting users from the weather and providing benches for seating while waiting for the bus. However, many older adults are reluctant to use PT because they find it difficult to access when and where they need it (14), and they lack knowledge or confidence in their ability to use PT (15).

PT training is becoming a common approach to overcoming some of the obstacles to PT use, with evidence suggesting increased knowledge, confidence, and sense of security among older adults (9,16–19). Moreover, among adults, PT training has been shown to improve the quality and frequency of trips, increase the likelihood of use, support personal development, and maintain community integration and engagement (20). In response to the need to target travel-related self-efficacy and provide social support for PT training (21), Accès Transports Viabes (ATV) developed the TanGo program in Quebec City (22). ATV is a non-profit organization whose mission is to defend the rights of users of public

transportation (PT, carpooling, and carsharing) and active transportation (walking and biking), as well as to promote sustainable mobility in the Capitale-Nationale and Chaudière-Appalaches regions (23). The TanGo program introduced individuals aged 60 and above to PT services, car-sharing, and bicycle use for practical journeys. At present, little is known about TanGo's impact on PT usage among older adults. Given the growing interest in training for public transit use within the framework of active aging, this study aimed to explore older adults' perceptions and experiences of the TanGo program. This includes the perceived influence of TanGo on facilitating public transit use and the reasons why some participants did not utilize public transit after completing the TanGo program.

Method

Study aim

With the heightened interest in PT training for supporting active aging, this study aimed to explore older adults' perceptions and experiences with the TanGo program, including the perceived influence of TanGo in facilitating PT use and reasons for not using PT after completion of TanGo.

Description of the population

To be eligible for the study, participants had to meet the following criteria: 1) being 60 years or older, 2) communicating in French, 3) having previously completed TanGo training, and 4) residing in Quebec City.

Recruitment and selection

Convenience sampling recruited participants between February and October 2020 (24). Older adults meeting these criteria were contacted by an ATV employee via telephone, using the program's internal database of TanGo graduates. Four students in their final year of a professional master's program in occupational therapy contacted individuals who expressed interest via telephone to obtain additional information about the study, provide informed consent, and schedule interviews.

Intervention (TanGo program)

The TanGo program was a free service for older adults who wanted to learn how to use PT services, including taking a bus. It comprises both didactic information sessions in a classroom setting and practical hands-on training sessions. The 90-minute information sessions were conducted in groups of at least five people. They consisted of PowerPoint presentations describing how to use PT (e.g., recognizing a bus stop, distinguishing types of routes, paying attention to details during the trip (sources of information), and recognizing signs). The practical hands-on training, which varied according to the

number of sessions (1 to 3) and the participants' needs, lasted between 60 and 180 min. Practical training was individualized according to the bus itinerary selected by the participant. A trainer from the ATV accompanied the participants throughout their travel. Each participant practiced five steps to take the bus (planning the trip, buying the ticket, boarding, moving around on the bus, and getting off the bus) and the particularities related to using PT (e.g., using a schedule, planning a route). At the end of the program, the trainer offered them information resources (RTC brochures and memory aids) as reminders.

Study procedures

Participants who agreed to participate in this study sent consent forms via email and provided verbal consent at the beginning of the interview. Semi-structured interviews were conducted via telephone or face-to-face, between February and October 2020. The interviews lasted between 10 and 73 minutes.

Sociodemographic data (sex, age, marital status, educational level, current employment status, and reported health conditions) were collected at the end of the interviews. A semi-structured interview guide developed by the research team and ATV consisted of six main questions and four sub-questions. Participants were asked about their community participation, experiences with the TanGo program, perceived barriers and facilitators of using PT, and reasons for not using PT after involvement in the TanGo program. The interview guide was piloted with employees from the ATV and with two older adults.

Theoretical framework

The Consolidated Framework for Implementation Research (CFIR) provided the theoretical framework for analyzing and interpreting the results. For more than ten years, the CFIR has been used as a conceptual model to guide the implementation of new practices in health and social service settings, including transportation (25–30). The CFIR has not yet been used to explore facilitators and barriers to implementing PT training for older adults. The CFIR considers 39 concepts (i.e., determinants) to identify barriers and facilitators that influence the successful implementation of a program or intervention organized into five domains: intervention characteristics (characteristics of the intervention that may influence success), external context (the economic, political, and social context may influence success), internal context (internal structural, political, and cultural contexts through which the implementation process will proceed), individual characteristics (cultural, organizational, professional, and individual mindsets, norms, interests, and affiliations), and implementation process (the process by which the intervention is implemented) (31,32).

Data analysis

Sociodemographic data were summarized using IBM SPSS STATISTICS 26 software. The interviews were transcribed verbatim (using Microsoft Word or professional transcription services) and verified by two research team members. Familiarization with transcripts and line-by-line coding were performed by a student (MK) using NVivo (QSR International, Melbourne, Australia). To ensure transparency in the coding process, a research professional experienced in qualitative research (DB) independently coded the transcriptions and supervised the student to provide a comprehensive understanding of the data. Any discrepancies were resolved through discussion (33). The CFIR was selected to guide deductive reflexive thematic analysis to identify and analyze themes in the data according to CFIR domains (34,35). Main themes were determined by grouping similar codes. Appropriate citations were chosen to illustrate each theme, ensuring that participants' data were fairly represented. Data analysis was an iterative and reflexive process, taking into account multiple interpretations of the data by coders and the research team. For example, five meetings were held between the student (MK), the research professional (DB) (backgrounds in rehabilitation science and anthropology), and two rehabilitation researchers (KB, MEL) (backgrounds in occupational therapy, in kinesiology and rehabilitation science) to discuss the various interpretations of the data. The data were also presented and discussed with collaborators from the ATV (DG and VM). Neither the researchers nor the students established relationships with the study participants before the study. All data were collected, coded, and analyzed in French. Participant quotations were translated into the manuscript and verified by two bilingual research team members (KB and DB).

Results

Ten retired older adults (seven females) were participants, with a mean (standard deviation) age of 82.0 (7.0) years, a high school or college education (n=7), and poor overall health, characterized by a self-reported condition manifesting in physical or mental issues that significantly restrict their autonomy in daily mobility, without resulting in a complete loss of independence (n=6). Six participants reported using the bus after completing the TanGo program, and seven were involved in community associations or commitments.

Four of the five CFIR domains emerged in the analysis, representing four themes: the characteristics of the intervention, external context, internal context, and characteristics of the individual. The process was not used for analysis because the program had already been implemented. Our study population consisted solely of program users without any information on the TanGo implementation process.

CFIR domain: Intervention characteristics

All participants enjoyed their experiences with TanGo and the ATV staff, with individual accompaniment during PT expeditions being the most valued. For example, P6 reported enjoying the TanGo program: « Oh, I love it! ». Participants' comments on each part of the training were positive, especially in relation to the practical aspect. They acknowledged that they felt more confident about using PT after TanGo.

"I loved the training. First, the person who was with me was extremely kind and answered my questions, and then when we took the bus. She explained many things to me. I appreciated it, and I appreciated it and was confident to take the bus afterward." (P6)

For other participants who had never received PT, the training offered confidence.

"I thought it was great, I liked it, and the fact that she came with us, that she made the trip, is reassuring, that is good. For someone who has never taken the bus in their life, you give them confidence and a chance." (P2)

For P2, the training fostered a degree of autonomy.

"Yes, it helped, yes, for sure... Once you have had the training, you can do more things." (P2)

For her, the training was helpful because PT is ecological and less expensive than a taxi service. Therefore, she believes that it is necessary to learn how to use them.

"From an environmental perspective, I'm more comfortable taking the bus than taking a taxi. A taxi is obviously a luxury, but at the same time, I think that is why I'm trying to improve access by bus to avoid using a car for myself." (P7)

The participants also recognized areas for improvement.

For some, the training was too long and packed with information, making it difficult for them to retain everything at their ages.

"Because of my age and limited abilities, I found it too intense. She provided me with much information, too much for my age and abilities." (P1)

Long-dense training reduced the concentration of older adults.

"So, there are probably some pieces of information that I missed because of that. It's like I stopped listening at times." (P1)

CFIR domain: External context

Some participants reported that the quality of PT had improved significantly. They appreciate the courtesy, respect, help, and altruism of drivers ‘and passengers.’

"Public transportation allows for socializing. One of the pleasures I have in taking the bus is the kindness of the people who are on it. For example, the help to get on the bus that people offer me." (P3)

Other participants, such as P10, complained about the difficulty accessing bus stops. They sometimes find them too far away, not cleared of snow, located on slopes, and above all, difficult to reach because of their physical ability.

"I can't get there. In addition to being too far for the capacity of my legs, it's also uphill." (P10)

"What's the use of having nice stops if they are too far away and not cleared of snow?" (P5)

The social environment (residential area or family) did not seem to facilitate the use of public transportation. Thus, some participants' families or residences provided a car for transportation when needed, so they did not have the chance to experience public transportation.

"For some places like the grocery store, the bank, those kinds of things, I use the residence car." (P10)

"And then for other outings that I do, my son who lives in Boischatel, he comes to pick me up and brings me back." (P10)

CFIR domain: Internal context

Some older adults have suggested that the attitudes and behaviors of drivers pose a barrier to using PT, stating that drivers often start too quickly without waiting for everyone to be seated first or noting that other passengers already occupy all seats. For P9, these situations were experienced as abrupt, as he described.

"There's this kind of abruptness that scares me a little bit, the sudden braking, I find it shakes a lot, you have to hold on, and obviously..." (P9)

"I've already fallen twice. Once, the bus driver helped me up, and the other time, two men helped me. Fortunately, some people give up their seats, and most of the time, people are nice. There's also when [the bus driver] brakes suddenly, I'm thrown backward, I didn't like that. I'm sitting towards the front. There was one time when the driver wouldn't let me out at the right stop, and I ended up at another stop very far away." (P3)

Some pointed out that sometimes the bus arrives completely and, therefore, does not stop.

"[...] Sometimes you wait 20 minutes, and two buses come one after the other. The first one is full and doesn't stop, and I didn't know there was a second one." (P2)

However, the older adults acknowledged that TanGo training allowed them to be aware and better know how to react based on situations that would arise on the bus, such as asking the driver not to start too fast. P1 expressed this when she said:

"Now, especially on the route where there aren't too many people, I ask him: 'Can you wait until I'm seated before you leave?' And so far, the few times I've asked, they've always respected it." (P1)

CFIR domain: Characteristics of individuals

Most of the older adults in the study had health problems that limited their ability to stand for long periods and walk. Some participants recognized that their inherent characteristics may impact their use of PT. For example, the wife (P4) in one couple (P4 and P5) mentioned that she could not get out of bed and that her husband stayed at her bedside. In this way, the husband (P5) explained that his wife's state of health influenced their lack of PT use:

"It's certain that if my wife had been in good health, the east-west circuit would have been very interesting for us. If we had been in good health, it's certain that we would have taken it [...] We didn't retake it because my wife is sick. My wife has Parkinson's disease and has no balance." (P5)

"I have severe osteoarthritis, back pain, four chronic illnesses, and daily physical pain. I'm very positive despite all this because these are the everyday aches and pains of someone my age, 82. Nevertheless, I still have a sense of humor and can laugh about it." (P3)

Another participant admitted that he did not return to using PT after the TanGo program because he had too much material to carry for his handyman job, and it was more convenient for him to use his car. For him, driving his car was a symbol of freedom compared with PT:

"I like being independent and not depending on others, so as long as I am able, that's my priority. And where am I going to keep my instruments? On the bus? They fit well in the trunk of my car." (P8)

Of all the participants, 60% felt that they had poor health. They had trouble leaving their homes to get to bus stops, especially during the winter. P10 said that he had a disability when describing his route to a bus stop:

"My disability made me think, 'Well, you have to know the place and be able to get to a route like that.' And then, 'This creates a dead end.' The fact that my disability and inability to walk to the parking lot created a difficulty in the itinerary." (P10)

Six older adults who continued to ride PT after TanGo had community commitments (involvement in associations). Thus, many wished to continue riding the bus with someone who did not have disabilities or loss of independence, and who could encourage and reassure them. P10 put it this way:

"I am more integrated into social life, with associations here, so as not to let old age win and to go out more often." (P10)

Discussion

Our research initially aimed to explore the perceptions and experiences of older adults regarding the TanGo training and the use of public transportation (PT) after completing the TanGo program. All participants in our study expressed positive experiences with TanGo, highlighting its informative content regarding PT. PT is valued for its environmental friendliness and cost-effectiveness compared to other modes of transport. The participants described how TanGo enhanced their knowledge and confidence in PT use, alleviating discomfort and fear. Moreover, they reported improved ability to understand PT-related symbols and messages. These findings align with those of previous research indicating the relevance of PT training in older adults (36,37). A better understanding of the factors related to PT training programs, the internal and external contexts, and the individual may provide important information for implementing PT training programs.

It is important to consider intervention characteristics and responsiveness to target group needs (27). Although TanGo targets older adults, participants recommended reducing the length of training and the amount of content, and tailoring it to a more practice-oriented learning style. This aligns with Baltes and Schaie's findings on aging and learning, advocating for varied, short-duration, and hands-on sessions integrated with theoretical content. Such training variability can bolster skills requiring information assimilation, which is crucial because intellectual abilities decline with age, particularly after 60 years (38,39). Loarer and Delgoulet (40) highlighted that age-related information retention and processing decline. Hence, reducing TanGo's content quantity and duration to support participant memory and retention aligns with these findings. Participants' feedback is essential for future PT training programs to ensure alignment with user needs (27,28). Additionally, research on PT program effectiveness, quality, adaptability, and cost could inform service providers of enhanced service delivery (27).

The external context considers how the needs of the population are met, and the influence of social, political, and economic factors. The results of this study suggest that social support may have influenced PT use after completing the TanGo program, specifically regarding the availability of alternative means of transportation. For example, one female participant explained that she did not use PT after completing TanGo because her place of residence provided her with a car and driver to run errands. If a driver was unavailable, her adult children were transported by car. In this way, social support may have influenced

PT use. Similarly, reluctance to stop driving among older adults may negatively influence their decision to use PT as a mode of transportation. This was the case for one participant who did not use PT after TanGo. For him, the car symbolized autonomy and efficiency in accomplishing his volunteer work. These results are consistent with several studies showing that PT use can be delayed by older adults who drive (41,42) or who are attached to a car for reasons of freedom and autonomy (43,44). Promising results by Pellichero et al. (42) suggest that providing PT training to people preparing to stop driving may ease the transition from independent driving to PT use. Similar to previous studies, additional external environmental barriers known to influence PT use were also highlighted by older adults in this study, for example, such as inaccessible bus stops and winters (43). Moreover, the health and mobility of older adults may also influence the external context, and should be considered when training for PT use.

When considering the internal context, it is essential to reflect on PT as a public service and consider all stakeholders. This research was conducted in collaboration with ATV, which developed the TanGo program. However, PT service providers were not included in this study. To best respond to the participants' comments about their experiences while using the bus and the attitudes of bus drivers, the development of future PT training programs should include local PT service providers. For example, factors related to the structural characteristics of PT training programs and PT services may be better targeted through engagement with all stakeholders. In this way, implementation climate and readiness factors (leadership, resources, and access to information) may be targeted in a collaborative approach to enhance PT use among older adults in Quebec. Moreover, this study only focused on PT training for bus use. Involvement from all stakeholders may enhance the implementation of training programs for using other PT services (e.g., metro, train, bike, ferry)

Finally, targeting the relevant individual characteristics is important for implementation (27). Following the TanGo program, all participants reported increased confidence in using PT, aligning with the findings that confidence significantly predicts PT behavior change (21). TanGo provided strategies for action planning and coping when faced with difficult situations (45) to overcome their difficulties. Enhanced self-efficacy, a predictor of future behavior, likely influenced most participants who utilized PT post-TanGo (46,47). The self-determination theory suggests that individuals are more inclined to engage in behaviors when they feel autonomous, competent, and connected to others, underscoring the importance of perceived competence in promoting PT usage (46,47). While participant appreciation for staff accompaniment during TanGo was evident, support from older adults skilled in PT may further bolster self-efficacy and relatedness among novice users (48). Learning by watching others, such as peer training, enhances self-efficacy and induces behavioral changes among older adults (46,47). Given that self-efficacy is predictive of future behavior (46,47), it is plausible that improved confidence influenced 60% of the participants who used PT after completing the TanGo program. According to the self-

determination theory, a person is more likely to engage in a behavior if they feel autonomous, competent, and related to others (49). Akin to self-efficacy, improving perceived competence through the provision of knowledge and skills may empower older adults to use PT over alternative transportation modes. While accompaniment during the TanGo program offered by the staff of ATV was appreciated by participants, accompaniment by older adults who are skilled in using PT may further support self-efficacy and relatedness for novice PT users (48). For example, learning by watching others with similar life experiences has been shown to enhance self-efficacy. Peer training can effectively change various health and social behaviors among older adults (50–52).

Understating individual characteristics may also help to understand why 40% of participants did not use PT after completing the TanGo program. Exploring sociodemographic characteristics, such as age, sex, marital status, and health conditions of older adults who did not use PT after TanGo may suggest that multiple factors likely influence the decision to use PT. For example, employment status and social engagement in the community have been shown to influence PT use (53,54). While all participants in this study were retired, many who continued to use PT after TanGo were involved in community associations or volunteered outside their homes. In contrast, among the participants who did not use PT after TanGo, only one actively volunteered in the community.

Limitations and perspectives

The study sample, although small, represented both men's and women's experiences of public transport (PT) training and bus use. Data collection began approximately 4 months before the COVID-19 pandemic, which challenged recruitment and data collection. To comply with the public health guidelines, some interviews were conducted remotely, such as by telephone or email. The data were collected, coded, and analyzed in French, translated into English, and verified by bilingual members of the research team. The interviews were conducted, on average, two years after the end of the TanGo program, which could have affected the accuracy of responses due to participants relying on memory. Additionally, changes in participants' health status could have influenced their current feelings about using public transport.

Although it would have been interesting to quantitatively assess PT confidence and frequency of use before and after the TanGo program, the results of this study could guide the creation of a questionnaire that highlights the potential of personalized training interventions to empower older people and promote sustainable modes of transport. This in turn fosters independence and social inclusion.

Conclusion

Older adults were satisfied with the TanGo program and felt more confident about taking the bus after completing the theoretical and practical PT training. All participants recognized the importance of PT

for older adults, particularly in terms of environmental and economic benefits. Approximately 60% of participants continued to use the bus after the TanGo program. CFIR intervention characteristics provide an appropriate framework for better understanding the proper way to implement training on the use of PT in older adults. Indeed, intervention characteristics can influence success; if interventions are not context-specific, they are likely to encounter community resistance. Regarding the external context, the economic, political, and social contexts in which an organization (ATV) resides can influence the success of program implementation. Regarding the internal context, the structural, internal policy, and cultural contexts in which the implementation process takes place are important. Additionally, individual characteristics, cultural, organizational, professional, and individual attitudes, norms, interests, and affiliations of older adults should be considered in implementing such training. Finally, the implementation process: the process by which the intervention is implemented must involve older adults.

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