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Promote social participation among older persons by identifying physical challenges – An important aspect of preventive home visits

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ABSTRACT

Introduction: Social participation can have a positive impact on health; however, physical challenges can be hindrances. During a preventive home visit a health professional (visitor) assesses different aspects of physical, mental and social health. However, there might be a challenge for the visitor to discover the interrelationship between physical factors that hinder social participation. Therefore, the aim of this study was, in the context of preventive home visits, to identify physical factors which can hinder older persons from taking part in social contexts.

Methods: Cross-sectional register data from preventive home visits to older persons ($n = 1245$, ≥77 years old, without home care) was used. Data was collected during a period of 17 months, in seven Swedish municipalities. Logistic regression was used to analyze the association between physical factors and the item *physical problems hindering social participation.*

Results: The mean age was 78.8 (standard deviation 1.8 years), and 55% were women. The physical factors significantly associated with physical problems hindering taking part in social contexts were: having urinary incontinence (women only), having pain, impaired endurance and using a mobility device.

Conclusions: This study provides insights into how to make the best use of the questions asked during preventive home visits, in order to enable older persons to take part in social contexts. The results recognize the importance of taking into account physical challenges to be able to support social participation. Furthermore, considering physical challenges for social participation on both an individual and a societal level might reduce inequalities among older persons.

1. Introduction

Social participation is associated with good health among older persons; nevertheless, physical challenges can hinder social participation. Preventive home visits (PHV) take a comprehensive approach towards health and can be an opportunity for identifying factors which can hinder social participation. However, different aspects of health are assessed during the PHV, one at a time, and there might be a challenge for the visitor to discover the interrelationship between physical factors that hinder social participation. This interrelationship must be identified in order to enable more older persons to take part in social contexts, and thereby maintain health.

Social participation has been defined as "…the person's involvement in activities that provide interaction with others in society or the community" (Levasseur, Richard, Gauvin & Raymond, 2010, p.7). However, the concept of social participation is ambiguous and multidimensional. It represents a continuum of activities from an individual level to a societal level (Levasseur et al., 2010). The continuum of social activities included in the concept starts with the individual level where the person engages in an activity alone (e.g. listening to the radio). It then moves on to doing something with others (e.g. playing games) and the final societal level is to do an activity for others (e.g. being politically active) (Levasseur et al., 2010). Nevertheless, this study takes its starting point in social participation as an ability to take part in social contexts, which is the person's subjective perception. It includes a continuum of activities, from engaging in an activity alone to do activities with or for others. Further, the activity could take place in a broad range of contexts for example their own homes, outside of home or in the society.

Social participation is a central aspect of health. The sustainable

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development goals (SDGs) launched by the United Nations in 2015 highlight social participation as an important factor (United Nations, 2015). For example, in goal number ten, social participation is a key to reducing inequalities within a society (World Health Organization, 2020). In goal number 11, an age-friendly environment that is inclusive and helps older persons to participate in social contexts is highlighted (World Health Organization, 2020). The SDGs show the need for further emphasis on social participation in health interventions that target older persons and thereby reduce inequalities and enable sustainable development.

The benefits of social participation are many, but individual physical challenges can be a hindrance. Longitudinal studies from Sweden (Haak, Löfqvist, Ullen, Horstmann & Iwarsson, 2019), United States (Glass, de Leon, Marottoli & Berkman, 1999) and Korea (Kim et al., 2016) show that social participation can for example lower the risk of mortality. Furthermore, social participation can decrease functional decline (Ide et al., 2020) and the length of hospital stays among older persons (Newall, McArthur & Menec, 2015). However, previous research has shown that physical challenges such as pain (Wilkie et al., 2016), mobility difficulties (Rosso, Taylor, Tabb & Michael, 2013) and impaired vision (Mick et al., 2018) have been associated with decreased social participation among older persons.

PHV is a health intervention which covers multiple aspects of social, physical and mental health (Markle-Reid et al., 2006). Research on PHVs has been around for decades, Denmark started already in the 1980s (Hendriksen, Lund & Strømgård, 1984). Since then, several studies on PHVs have been conducted around the world, for example in Asia, Europe and North America, and the general purpose is to prevent risks and promote health (Tourigny et al., 2015). Furthermore, meta-analyses show that PHVs could for example delay mortality (Elkan et al., 2001; Stuck, Egger, Hammer, Minder & Beck, 2002) and decrease functional decline (Huss, Stuck, Rubenstein, Egger & Clough-Gorr, 2008). The visit is most often led by a nurse and usually it involves a comprehensive geriatric assessment (Tourigny et al., 2015). Additionally, in a couple of Swedish studies, the emphasis was on the assessments of risks such as fall (Sjödahl Hammarlund, Hagell & Westergren, 2016) and malnutrition (Westergren, Hagell & Sjödahl Hammarlund, 2014). Hence, to highlight elements in the assessment that could promote good health, a recent study among older persons who received a PHV identified factors associated with good health. In this study good health was seen among those who did not have a physical hindrance for social participation (Nivestam, Westergren, Petersson & Haak, 2020). During the PHV there is an opportunity for the visitor to identify physical challenges which can have an impact on the person's ability to take part in social contexts. By interventions focused on physical challenges, social participation might be facilitated, and in turn the person's health might improve. Previous research has highlighted the importance of using a structured questionnaire covering multiple aspects of health during the PHV (Fjell et al., 2018; Seiger Cronfalk et al., 2017). However, assessing one aspect of health at a time might increase the risk of ignoring associations between aspects of health, which could constitute a hindrance to social participation. To better understand how to make the best use of the questions covered during the PHV and thus support social participation, and thereby health among older persons, the aim of this study was, in the context of PHVs, to identify physical factors which can hinder older persons from taking part in social contexts.

2. Methods

2.1. Study design

This study has a cross-sectional study design based on register data from PHVs.

2.2. Context

This study was conducted in seven south Swedish municipalities with long experience of providing PHVs. The municipalities' health services send invitation letters giving the time and date of the visit to persons who are 77 years or older and have no or minimal home care. The visit is free of charge and optional. Health professionals (about ten visitors) in seven municipalities conduct the visits. The estimated acceptance rate, i.e. rate of older persons accepting a home visit after invitation, is on average 75%. The visit last for approximately two hours and includes a dialog about different aspects of health (e.g. physical, mental and social) discussed one at a time based on a structured questionnaire. Further details have been published elsewhere, see e.g. (Nivestam et al., 2020; Nivestam, Petersson, Westergren & Haak, 2020). Geographically, the seven municipalities cover both urban and rural areas. In 2019, on average the population aged 75–79 numbered 2600–3800 persons in the larger municipalities and 340–690 in the smaller municipalities (Statistics Sweden, 2019).

2.3. Data collection and sample

Anonymised register data from the PHVs was analysed in this study. Older persons who participated in the PHVs from October 2018 to February 2020 and answered a question about physical problems hindering social participation, in total 1245 persons, were included in the study.

2.4. Questionnaire

In the present study, questions selected from the register to be included are listed in Table 1. The questions have been developed by health professionals, older persons and researchers, with the purpose of supporting the dialog during the PHV (Laustsen, Petersson, Westergren & Haak, 2020). The questions in the questionnaire have been chosen based on previous experiences of PHVs in the municipalities and with inspiration from risk assessment tools (Nivestam et al., 2020). There were 19 items used in the present study (Table 1).

2.5. Analysis

To increase interpretability, three items were dichotomised: *cohabitation, transportation,* and *satisfied with life* (Table 1). Independent bivariate analyses, i.e. comparing those who had physical problems hindering social participation and those with no such problems were done with the items described in Table 1. Chi-square tests were used for all items except for age, where a *t*-test was used to compare the two samples. The level of significance was set to p-value < 0.05. The demographic factors and satisfied with life can have an impact on the dependent item, therefore they were included in the analyses. Logistic regression with *physical problems hindering social participation* as the dependent item and all items with a p-value ≤ 0.2 from the bivariate analysis (Table 2) were used as independent items. The item *age* had 220 internal missing observations and mean substitution (Westergren &

Table 1
Description of the items.

Items	Question	Answer	New items
Physical problems hindering social participation	Do you have any physical problem that is hindering you in social contexts?	No or Yes	
Demographic factors			
Age	What year were you born?	Year	
Gender	Gender	Male or Female	
Country of birth	Country of birth	Sweden or another country	
Settlement	Settlement	Rural or Urban. (Definition of urban is a town with more than 200 inhabitants)	
Cohabitation	Cohabitation	Cohabitant, Alone or Living apart	Dichotomised; Cohabitant or Alone/Living apart
Satisfied with accommodation	Are you satisfied with your accommodation?	No or Yes	
Safe neighbourhood	Do you feel safe in your neighbourhood?	No or Yes	
Worried about finances	Are you worried about your finances?	No or Yes	
Transportation	Transportation	Own car, Bus, Train, Bike, Transportation service, Do not travel or Other	Dichotomised; Not able to travel/ Transportation service or Public/Own transport/Other
Life satisfaction			
Satisfied with life	Do you feel satisfied with your life in general?	Yes, Fairly or No	Dichotomised; Yes or Fairly/No
Physical factors			
Impaired endurance	Have you experienced impaired endurance? (Do you get tired after a walk of 15 min?)	No or Yes	
Pain	Are you bothered about pain?	No or Yes	
Urinary incontinence	Are you bothered about urinary incontinence?	No or Yes	
Digestive problems	Do you have problems with your tummy?	No or Yes	
Vision	Do you experience problems with you vision?	No or Yes	
Hearing	Do you experience problems with your hearing?	No or Yes	
Dizziness	Are you bothered by dizziness?	No or Yes	
Mobility device	Do you use a mobility device?	No or Yes	

Jakobsson, 2006) was conducted. Linear regression was used to test for multicollinearity. A tolerance <0.4 (Norman & Streiner, 2014) and variance inflation factor >2.5 (Glantz & Slinker, 1990) indicates problems with multicollinearity. Logistic regression (enter) analysis was carried out on the total sample and then again for men and women separately. After the first regression analysis, non-significant items were excluded. These were: *settlement, worried about finance, digestive problem, dizziness, vision problems and hearing problems*. After the second regression analysis, *not satisfied with accommodation* was excluded. All significant items, and gender (in the total sample) and age were included in order to adjust the final models. Hosmer and Lemeshow's goodness-of-fit test was used to measure model fit. This measures

Table 2
Characteristics of older persons ($n = 1245$) in relation to physical problems hindering social participation assessed during the preventive home visits.

	Total $n = 1245$	Physical problems hindering social participation		P-value[a]
		Yes $n = 264$	No $n = 981$	
Demographic factors				
Age, mean (SD)	78.8 (1.8)	78.4 (1.7)	78.9 (1.9)	0.001[b]
Women, n (%)	683 (55.1)	167 (63.3)	516 (52.9)	0.003
Born in Sweden, n (%)	1133 (92.6)	241 (93.8)	892 (92.3)	0.434
Settlement, rural, n (%)	245 (19.8)	61 (23.3)	184 (18.9)	0.112
No cohabitant, n (%)	463 (37.2)	105 (39.8)	358 (36.6)	0.339
Not satisfied with accommodation, n (%)	33 (2.7)	13 (5.0)	20 (2.1)	0.010
Not feeling safe in the neighbourhood, n (%)	28 (2.3)	8 (3.1)	20 (2.1)	0.335
Worried about finances, n (%)	47 (3.8)	18 (6.8)	29 (3.0)	0.004
Not independently managing transportation, n (%)	57 (4.6)	32 (12.2)	25 (2.6)	<0.001
Life satisfaction				
Not satisfied with life, n (%)	134 (10.8)	62 (23.6)	72 (7.4)	<0.001
Physical factors				
Impaired endurance, n (%)	212 (17.2)	96 (36.6)	161 (11.9)	<0.001
Pain, n (%)	560 (45.2)	186 (70.7)	374 (38.4)	<0.001
Urinary incontinence, n (%)	220 (17.9)	94 (35.7)	126 (13.1)	<0.001
Digestive problems, n (%)	175 (14.1)	64 (24.4)	111 (11.4)	<0.001
Vision problems, n (%)	389 (31.2)	120 (45.5)	269 (27.4)	<0.001
Hearing problems, n (%)	442 (35.5)	115 (43.6)	327 (33.3)	0.002
Dizziness, n (%)	268 (21.7)	94 (35.6)	174 (17.9)	<0.001
Use mobility device, n (%)	241 (19.4)	114 (43.2)	127 (13.0)	<0.001

SD = Standard Deviation, internal dropout varies between $n = 2$–21 except age $n = 220$
[a] Chi-Square test unless other stated
[b] Independent sample *t*-test.

differences between actual and predicted values of the dependent item. Good model fit is indicated by a non-significant value, indicating no difference in actual and predicted dependent values (Hair, Anderson, Tatham & Black, 1998). Model fit was also assessed by Nagelkerke's R^2, indicating the model's proportion of explained variation in the dependent item (Hair et al., 1998). Statistical analyses were conducted using the Statistical Package for the Social Science version 24.

2.6. Ethical approval

The study was conducted in accordance with the Declaration of Helsinki (World Medical Association, 2018) and approved by The Ethical Review Board, Lund, Sweden (reference number 2018/849 and 2020–02343). Informed consent was obtained from the participants before data was entered in the register.

3. Results

The persons ($n = 1245$) had a mean (standard deviation) age of 78.8 years (1.8 years) and 55.1% were women, 92.6% were born in Sweden, 19.8% were living in rural areas, 37.2% were living alone, 2.7% were not satisfied with their accommodation, 2.3% felt not safe in the neighbourhood, 3.8% were worried about finances and 4.6% did not independently manage their transportation.

Those reporting having physical problems that hindered them from taking part in social contexts also reported more challenges with physical factors than those not reporting such problems (Table 2).

Mean substitution of missing values ($n = 220$) for age did not change the outcome from the logistic regression analyses compared to when no mean substitution was used. Thus, the logistic regression models (Table 3) are presented using the total sample with mean substitution for missing values on age. The physical factors significantly associated (i.e. not including one in the 95% confident interval) with physical problems hindering taking part in social contexts were: *having urinary incontinence, having pain, impaired endurance and using a mobility device* (Table 3). Furthermore, *not satisfied with life* and *not independently managing transportation* were also associated with physical problems hindering taking part in social contexts. *Urinary incontinence* and *not independently managing transportation* were associated with physical problems hindering taking part in social contexts for women but not men. In addition, lower age was associated with physical problems hindering taking part in social contexts for women.

4. Discussion

In order to enable more older persons to take part in social contexts, and thereby maintain health, there is a need to identify physical challenges in the context of health intervention such as PHVs. By doing this it becomes possible for visitors to provide support and advice, which empowers persons to master or cope with physical challenges that hinder them from taking part in social contexts. Furthermore, society can consider the association between the person's physical challenges and social participation to create an age-friendly society.

The aim of this study was, in the context of PHVs, to identify physical factors which can hinder older persons from taking part in social contexts. The results showed that physical factors, *having urinary incontinence* (women only), *having pain, impaired endurance* and *using a mobility device* were significantly associated with having physical problems hindering taking part in social contexts.

A health promotive dialog is needed during the PHV. This dialog should consider both physical challenges and social activities available for the person. The results showed some physical factors which could limit older persons' ability to take part in social contexts, for example, pain and impaired endurance. Similar associations have been shown in previous research. A prospective cohort study showed that pain can result in a reduction of social participation among older persons (Wilkie et al., 2016). Also, among persons with a mean age of 64 years lower walking speed was associated with a reduction in social participation (Warren, Ganley & Pohl, 2016). However, by identifying these challenges during the PHV, there is a possibility to help the person master or cope with challenges that can hinder the person from taking part in social contexts. A review stressed the importance of having a dialog, since this supports good health and does more than just focus on asking questions in order to assess risks during the PHV (Fagerström, Wikblad & Nilsson, 2009). With the results from the present study the association between physical factors and social participation is clarified, which can assist visitors in the dialog with persons who experience physical challenges. A dialog could take place which focuses on physical challenges such as pain and impaired endurance in relation to social participation. On the whole, to promote health, challenges noticed by the visitors when asking questions about physical factors have to be linked to social participation.

In addition, the present study identified gender differences which can have implications for women's ability to participate in social contexts. The present results showed that urinary incontinence can hinder

Table 3
Items significantly associated with physical problems hindering social participation ($n = 1199$), separated women ($n = 663$) and men ($n = 534$). Model adjusted for age and gender.

	Physical problems hindering social participation					
	Total[a]		Women[b]		Men[c]	
	OR	CI 95%	OR	CI 95%	OR	CI 95%
Age	0.93	0.84–1.03	0.86	0.75–0.99	1.01	0.86–1.17
Gender	1.10	0.79–1.52	–	–	–	–
Not satisfied with life	2.38	1.54–3.67	2.61	1.46–4.68	2.09	1.07–4.06
Not independently managing transportation	2.20	1.17–4.12	2.73	1.31–5.71	1.30	0.35–4.83
Urinary incontinence	1.85	1.28–2.68	2.09	1.33–3.27	1.29	0.65–2.58
Pain	2.27	1.63–3.18	2.42	1.55–3.78	2.23	1.32–3.77
Impaired endurance	2.38	1.66–3.42	2.52	1.56–4.06	2.32	1.32–4.09
Mobility device	3.29	2.31–4.68	3.07	1.96–4.78	4.13	2.27–7.54

CI = Confidence Interval, OR = Odds Ratio. None of the items showed multicollinearity; tolerance 0.72–0.95 variance inflation factor 1.09–1.37. Non-significant items were excluded in this final model; settlement, worried about finances, digestive problems, dizziness, vision problems, hearing problems, and not satisfied with accommodation.

[a] Hosmer-Lemeshow goodness-of-fit test, $X^2 = 12.53$, $p = 0.13$; Nagelkerke $R^2 = 0.28$.

[b] Hosmer-Lemeshow goodness-of-fit test, $X^2 = 10.8$, $p = 0.21$; Nagelkerke $R^2 = 0.31$.

[c] Hosmer-Lemeshow goodness-of-fit test, $X^2 = 10.0$, $p = 0.27$; Nagelkerke $R^2 = 0.23$.

women from taking part in social contexts. A previous study acknowledges a similar association between urinary incontinence and social participation among women (Vo, Forder & Byles, 2016). However, urinary incontinence is more prevalent among women than men (Milsom & Gyhagen, 2019). Hence, when having a dialog and giving advice about incontinence during the PHV, no matter whether the person is a man or woman, it is important to talk about how incontinence might affect the person when participating in social activities. Moreover, differences between men and women concerning social participation have been shown in previous research. For example, older women wish to participate more in social activities than men (Naud, Généreux, Bruneau, Alauzet & Levasseur, 2019). However, a previous study showed that older persons and women in particular tend to experience social exclusion from partaking in societal decisions (Dahlberg, McKee, Fritzell, Heap & Lennartsson, 2020). Nevertheless, in order to minimize the risk of inequalities among genders, it is worth acknowledging that women and men need person-centered support.

To make the best use of the questions asked during PHV they can be considered on a societal level as well. This study highlights factors such as using mobility devices and not independently managing transportation (among women only) as hindering taking part in social contexts. Over 20 years ago mobility was already recognised as a fundamental factor affecting ability to take part in social contexts (Mollenkopf et al., 1997). However, older persons still experience that problems with transportation (Naud et al., 2019) and mobility difficulties (Rosso et al., 2013) can hinder social participation. Considering these associations between physical challenges and social participation on a societal level opens up opportunities to create an age-friendly society and a sustainable future for older persons. During PHVs, data is constantly gathered that gives a picture of the challenges older persons in this population are facing. The data gives the possibility to predict present and future needs and thereby plan for future resources. Furthermore, the data could be used to help policymakers to consider how to create a society which enables social participation by taking into account physical challenges and thereby achieving the SDGs (United Nations, 2015). Thus, the results of this study can give an indication to policymakers that the issue with access to social activities still exists and more work has to be done.

Turning to some methodological considerations' worth considering, this was a cross-sectional study, which involved some challenges. Nothing could be said about causality between items. For this a longitudinal study is needed. For instance, a causal relationship between maintained social contacts over time and decreased mortality was found in a Korean longitudinal study (Kim et al., 2016). Another methodological aspect worth consider in the present study is the fact that the items from the register are not intended for research, which can decrease the validity of the results. However, the items are used in practice, which increases the applicability of the results. Using validated items on a population-based sample would increase the implications for policy development beyond the PHVs. This study focuses on physical challenges. It could also be said that mental challenges can hinder a person from taking part in social contexts (Wilkie et al., 2016), which should be investigated in future studies. However, *satisfied with life* can be regarded, implicitly, as an indicator of mental health. Interestingly, this item was found to be significantly associated with physical problems hindering social participation. The sample size was large, which increases the generalisability. Still there is no data available on external missing observations, which may have a negative impact on the generalisability of the results. A study by Liljas et al. (2019) show that persons who are hard to reach in health interventions do not partake in the interventions due to, for example, transportation problems or language barriers. However, by making a home visit the transportation issue does not arise. Concerning language barriers, neither this was an issue in the present study. Most likely it is due to the fact that 92.6% of the participants were born in Sweden. Furthermore, it is worth considering substitution of mean, which increases the risk of type I error (Westergren & Jakobsson, 2006). However, the logistic regression models with and without substitution of mean showed the same results. Data was collected by different visitors, which may reduce the objectivity since the collection might not have occurred in the same way. The visitors meet every third month and discuss the procedure with the researchers. This might increase the objectivity of the data collection process.

5. Conclusions

This study provides insights into how to make the best use of the questions asked during PHV in order to enable older persons to take part in social contexts. The results recognize the importance of considering physical challenges in order to support social participation, and thereby health. This can give guidance for visitors conducting PHVs and for persons in leading positions in society. Taking into account the physical challenges for social participation, both on an individual and a societal level, might reduce inequalities among older persons.

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CRediT authorship contribution statement

Anna Nivestam: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization. **Albert Westergren:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - review & editing, Project administration. **Pia Petersson:** Conceptualization, Methodology, Investigation, Writing - review & editing, Project administration. **Maria Haak:** Conceptualization, Methodology, Investigation, Writing - review & editing, Supervision.

Declaration of Competing Interest

The authors have no conflicts of interest to declare.

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