Urinary incontinence, sense of control/autonomy and social participation in community-dwelling older adults

Ediane Pereira Machado Silva[1]
Flávia Silva Arbex Borim[1,2]
Mariana Bianchi[1]
Mônica Sanches Yassuda[1,3]
Anita Liberalesso Neri[1,4]
Samila Sathler Tavares Batistoni[1,3]

Abstract

Objective: Identify the presence of urinary incontinence (UI) symptoms and test a model of direct and indirect associations with the psychosocial variables sense of control/autonomy and social participation in community-dwelling older adults. *Method:* Cross-sectional study conducted with 419 adults aged 72 years or over (70.2% female) participating in the follow-up survey of the FIBRA Study - Polo Unicamp. Age, sex and educational level were the sociodemographic variables selected as antecedents of the relationship between UI and social participation. A sense of control/autonomy was tested as a mediator of these relationships in a path analysis through structural equation modelling. *Results:* UI was reported by 38% of the sample, with significant differences according to sex (41% female versus 31.3% male). Three levels of social participation were proposed, based on the degree of interaction between the individual and society. The model of relationships explained 15% of the variance in social participation. Direct effects were observed between control/autonomy and social participation; indirect effects between education and participation, mediated by the presence of UI. *Conclusion:* UI contributed to restrictions in social participation at all levels. Control/autonomy, although related, did not prove to be a psychological mediator for the relationship between UI and participation. The presence of UI potentialized the disadvantageous relationships between education and social participation. As modifiable factors, the treatment and management of UI through clinical and psychosocial initiatives can act to reduce negative psychological effects and reduce socioeconomic inequalities in social participation.

Keywords: Urinary Incontinence. Health of the Elderly. Social Participation. Quality of life.

[1] Universidade Estadual de Campinas, Faculdade de Ciências Médicas, Programa de Pós-graduação em Gerontologia. Campinas, SP, Brasil.

[2] Universidade de Brasília, Departamento de Saúde Coletiva, Faculdade de Ciências de Saúde. Brasília, DF, Brasil.

[3] Universidade de São Paulo, Escola de Artes, Ciências e Humanidades, Programa de Pós-graduação em Gerontologia. São Paulo, SP, Brasil.

[4] Universidade Estadual de Campinas, Departamento de Psicologia Médica e Psiquiatria da Faculdade de Ciências Médicas. Campinas, SP, Brasil.

Funding: CAPES/PROCAD número 2972/2014-01 (Projeto nº 88881.068447/ 2014-01), FAPESP número 2016/00084-8 e CNPq número 424789/2016-7.

The authors declare there are no conflicts in the conception of this work.

Correspondence
Samila Sathler Tavares Batistoni
samilabatistoni@usp.br

Received: October 7, 2021
Approved: March 14, 2022

http://dx.doi.org/10.1590/1981-22562022025.210207en

INTRODUCTION

In the list of signs and symptoms used in epidemiological health surveys, the report of "involuntary loss of urine in the last year" is a simple and useful strategy to operationalize and estimate the presence of urinary incontinence (UI) in community-dwelling older adults[1]. An affirmative answer to the question is an important marker of health morbidity and worse physical and cognitive functionality, with negative repercussions on quality of life and sleep quality and an aggravating factor for conditions like frailty, falls, hospitalization, institutionalization and death[2-4].

Regardless of clinical classification, it is estimated that 50% of women will experience UI symptoms throughout their lives, and the prevalence of UI is higher among women than among men (60% to 30%)[1,2,5]. Based on a systematic review and meta-analysis, a prevalence of UI of 37.1% in older adult women is estimated, with rates varying between 29.6 and 45.4%[1]. Older adult women are about twice as susceptible to UI as older men[2,6].

As indicated by data from clinical research literature, older adults with UI are more likely to be restricted in the performance of daily self-care and social participation activities, experience increased feelings of loneliness and social isolation, and present increased risk for depression and anxiety[7-10]. The negative effects of UI on social participation constitute a potential barrier to public and clinical goals of promoting involvement and maintenance of social participation in old age. Defined as "involvement in activities that provide interactions with other people in the community"[11], social participation is a highly valued concept in gerontology, considered one of the pillars of the promotion of active aging and the Decade of Healthy Aging (2021-2030)[12]. Older adults with UI are less likely to engage in social activities outside the home, such as going shopping or attending church or religious services[13,14], as evidenced by samples with different sociodemographics[3] and cultural conditions[15].

Psychological repercussions derived from social constraints and psychological hypervigilance in the face of episodes of urinary leakage can contribute to reducing the probability of involvement in social leisure activities, physical exercise, festivities and volunteer work[16]. The presence of UI in old age is associated with personal experiences and social attitudes that involve a sense of loss of control and autonomy over persons´s own life, dependence, frailty and social isolation[17,18].

As an indicator of human agency, a positive sense of control and autonomy is an important prerequisite for participation in society[19]. Psychological measures operationalize a sense of control and autonomy from the agreement or disagreement of individuals with items that express the exercise of free choice and the overcoming of limitations or social, economic and health barriers, in order to achieve the expected results[20].

Associations between positive indicators of control and autonomy and involvement and maintaining participation in social activities are reported in studies with large population samples[20-22]. Evidence suggests that, if the measurements of these constructs are affected by the presence of UI, they also have the potential to affect the social participation of older adults, acting either as a risk factor, or as a protective factor or personal resource for resilience against restriction in social activities[23-25].

Although the gerontological and geriatric literature evidence the psychosocial repercussions of UI, there is relatively little investment in the investigation of the psychological older adults in social activities[18,26-27]. The interrelationships between conditions of sex, age and education, which differently expose older adults to opportunities and choices for involvement in social activities, can influence the magnitude of these relationships. They can be mediated by psychological factors that promote or decrease the probability of social participation in old age[27]. A sense of control over life and personal autonomy can be affected by UI and can affect the participation of older adults in social activities[28]. Identifying the magnitude of these relationships enables the exploration of pathways for clinical and psychosocial interventions.

Therefore, this study sought to identify the presence of urinary incontinence (UI) symptoms and to test a model of direct and indirect associations between psychosocial variables, the sense of control/autonomy and social participation in community-dwelling older adults.

METHODS

This is a cross-sectional, population-based study, based on follow-up data from a cohort of older adults conducted by the FIBRA Study – Frailty Profile of Elderly Brazilians[29]. In 2016-2017, older adults living in Campinas and Ermelino Matarazzo, a sub-district of the City of São Paulo (SP), Brazil, were contacted again for data collection and longitudinal analyzes based on the follow-up of this cohort. Household address lists recorded in the 2008-2009 baseline databases were used to recruit older adults for follow-up measures. Trained recruiters actively searched for these older adults on up to three occasions at the registered addresses. Informants or family members found at the time of recruitment were contacted, to be present with older adult at the time of the interview or to offer information about older adults who had cognitive impairments, identified by applying the Mini-Mental State Examination (MMSE)[30].

Figure 1 presents the flowchart of the composition of the follow-up sample of the FIBRA Study. Excluding sample losses, responses provided by the informants or family members, and deaths, 419 older adults responded fully to the research protocol.

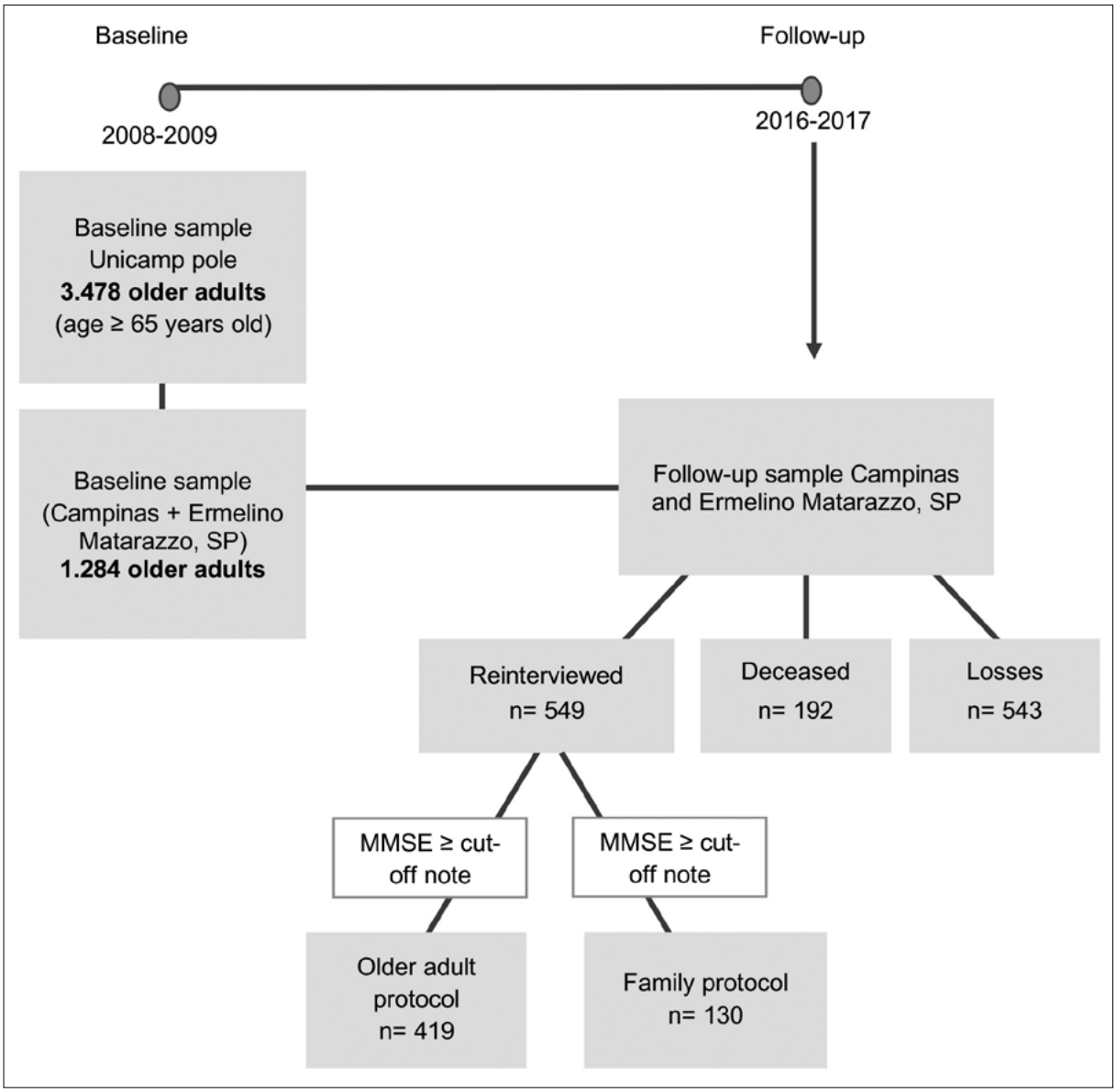

Figure 1. Flowchart of the FIBRA Study sample composition for the baseline and follow-up survey. FIBRA Study, Older adults, Campinas and Ermelino Matarazzo, SP, Brazil, 2016/2017.

For this study, selected information on 419 older adults who participated in the follow-up survey was used. The following inclusion criteria were applied: participation in data collection at baseline (2008-2009); clarification and agreeing to participate in a further data collection; and screening that required scoring above the cut-off for cognitive decline on the MMSE[30], adjusted for education level: 17 points (illiterate); 22 points (1-4 years of education); 24 points (5-8 years of education) and 26 (9 or more years of education).

To identify the presence of UI in the sample, one of the items from the questionnaire on health signs and symptoms was used: "In the last 12 months, have you had involuntary loss of urine?" Affirmative answers determined the presence of UI and negative answers, the absence of UI.

To identify social participation, responses to the Advanced Activities of Daily Living (AADL) scale were used. This scale was developed for the study based on Reuben et al.[31] and Baltes et al.[32], to identify the involvement of the older adults in a set of leisure and social activities, performed in their free time and independent of paid work; volunteering, educational activities and social participation in the community. It consists of 26 items, each with three response options: 1, "I have never done it"; 2, "I stopped doing it"; 3, "I still do it".

Of the 26 activities in the scale, 10 were classified by us as corresponding to the concept of participation and the taxonomy of social activities proposed by Levasseur et al[11]. They conceptualize participation as the involvement in activities that provide interactions with other people in the community, activities that can be organized by levels of complexity. These levels reflect the needs, proximity or repercussions of the individual, groups and society[11].

In light of the taxonomy of Levasseur et al[11], 10 items from the AADL scale referring to social participation, including the activities "visit others at their homes" and "entertain at home", were classified as proximal social activities, since they are less complex, require less displacement or physical effort and because they are initiated and maintained by the individual themselves. The activities "keeping in touch by letter or phone with friends and family" and "using e-mail or social networks to communicate with friends and family" were also classified as proximal activities, however, mediated by some technology. The activities "going to church for religious rituals or social activities linked to religion", "attending meetings, parties or dances", "meeting with people in public places, restaurants, cinemas, theaters, concerts, clubs, etc." and "participating in a university open to older adults, community centers or refresher courses" were classified as intermediary social activities, which can require more functionality resources and greater geographical displacement, can involve interaction between people and can be mediated by social institutions. Distal activities were classified as those that presuppose exchanges or the offer of social capital, greater functional demands and broader social interactions between the individual and society; these were: "doing voluntary work" and "taking part in boards, councils of associations or clubs, schools, unions, cooperatives, social centers, or political activities". A total score for each level of participation was identified from the choice of responses, "I have never done it", "I stopped doing it" and "I still do it", issued for each item.

A sense of control and autonomy was identified from the responses of the older adults to six items from the Brazilian Portuguese version of the CASP-19 scale (Factor 2)[20-21]. Originally developed in the United Kingdom, the scale measures quality of life in old age from a theoretical model of psychological needs satisfaction (control, autonomy, self-fulfillment and pleasure, the initials of which produce the acronym CASP-19), expressed in 19 items with four intensities each (0 to 3). The score on the whole scale ranges from 0 to 57. In the Brazilian version of the scale, the six items corresponding to the control and autonomy factor (Factor 2) score from 0 to 18 points (items 1, 2, 4, 6, 8, and 9) as follows: 0, never; 1, occasionally; 2, almost always; and 3, always. These items achieved Cronbach's $\alpha = 0.67$, an indication of moderate internal consistency[21]. The sociodemographic variables age, sex and education were selected to describe the sample and identify antecedent conditions in the analysis of relationships with the remainder.

Descriptive analyzes of the variables of interest were performed with absolute and relative frequencies for the categorical data and measures of position and dispersion for the quantitative data. Percentage distributions and respective 95% confidence intervals were estimated.

Spearman's nonparametric rank correlation test was used to estimate the magnitude and statistical significance of bivariate associations. From the analysis of the correlation matrix, we were able to generate an understanding of the behavior of the data, before moving on to more advanced analyses. The significance level adopted for the tests was 95% or $p<0.05$.

Path analysis via the structural equation method was used to test the direct and indirect relationships between selected observable variables. Recursive and latent variables were not used[33]. A hypothetical model of relationships was formulated, with the following ordering: a) age, sex and education indicators were considered antecedents to all the variables under study; b) the presence of UI was considered antecedent to the sense of control/autonomy and the indicators of social participation; c) a sense of control/autonomy was proposed as a variable associated with participation, as well as a variable that mediates the indirect relationships between UI and social participation.

To analyze the goodness of fit of the data to the proposed model, significance tests were performed for the path coefficients (expressed as betas; $t>1.96$). The parameters adopted to accept the model were: chi-square test >0.05; chi-square ratio (X2/GL) <2; SRMR (standardized root mean square residual) <0.10; RMSEA (root mean square error of approximation) <0.08; CFI (comparative fit index) >0.90; and TLI (Tucker-Lewis index) >0.9033.

This study was approved by the Human Research Ethics Committee of the State University of Campinas (UNICAMP), on December 15 2014, report no. 907.575, CAAE 39547014.0.1001.5404, report no. 1,332,651 of November 23 2015, CAAE 49987615.3.0000.5404 and report no. 3,502,189, CAAE 16559119.7.0000.5404. All participants signed a term of free, informed consent in which the objectives of the study, the content of the interviews and the ethical commitments of the researchers to the participants were explained.

RESULTS

Regarding all the participants (N=419), the majority were female (69.9%), aged 80 years or older (55.9%), with between 1 and 4 years of education (58.2%). Our analysis showed that 37.9% of the older adults presented urinary incontinence, while 59.1% presented control/autonomy above the median of 14 points. Regarding the maintenance of social participation, most of the sample reported being involved in at least one activity, as well as in social activities mediated by technology (75.4%). Engagement in intermediary social activities showed greater variation, with the highest percentages of older adults participating in one to three activities; 72.9% reported no involvement in distal social activities (Table 1).

In comparative analyzes (Pearson's chi-square test), the presence of UI was significantly different between the sexes (41% female versus 31.3% male; $p=0.036$) regarding specific participation in intermediary social activity "participating in meetings, parties or dances" (33.3% of older adults with UI participated, 43% did not; $p=0.01$), such that in all individual items that measured control/autonomy there was a lower frequency of scores that express better control/autonomy ($p<0.05$).

Table 2 describes the magnitude of the correlations between the variables. Negative correlations between age x sex and education x control/autonomy were significant, but of low magnitude. UI was negatively correlated with control/autonomy and with participation in technology-mediated social and proximal activities. Greater control/autonomy correlated with participation in proximal social activities. Participation in technology-mediated proximal social activities showed the highest number of negative correlations with age, education, control/autonomy and proximal social activities, togethere with a positive correlation with sex (female).

Table 1. Sample characterization according to sociodemographic variables, presence of UI, control/autonomy and social participation. FIBRA Study, Older adults, Campinas and Ermelino Matarazzo, SP, Brazil, 2016/2017.

Variable	N (%)	95%CI
Sex		
Female	293 (69.9)	65.3 - 74.1
Male	126 (30.1)	25.8 - 34.6
Age (M=72.6±5.9)		
65-79 years old	185 (44.1)	39.4 - 48.9
≥ 80 years old	234 (55.9)	51.3 - 60.5
Education (years)		
No formal education	57 (13.6)	10.6 - 17.0
1-4	244 (58.2)	53.4 - 62.9
≥5	118 (28.2)	24.4 - 32.7
Urinary Incontinence		
No	260 (62.1)	23.7 - 66.5
Yes	159 (37.9)	33.4 - 42.8
Control/Autonomy		
Below the median (<14 points)	153 (40.9)	33.4 - 42.8
Above the median (≥14 points)	221 (59.1)	57.1 – 66.5
Social Participation		
Proximal Level		
None	44 (10.6)	7.9 - 13.9
1 activity	313 (75.4)	71.3 - 79.3
2 activities	58 (14.0)	10.9 - 17.6
Proximal Level mediated by technology		
None	44 (10.6)	7.9 - 13.9
1 activity	313 (75.4)	71.3 - 79.3
2 activities	58 (14.0)	10.9 - 17.6
Intermediary Level		
None	44 (10.6)	7.9 - 13.8
1 activity	122 (29.2)	25.7 - 33.8
2 activities	127 (30.5)	26.2 - 35.6
3 activities	109 (26.1)	22.1 - 30.5
4 activities	15 (3.6)	2.1 - 5.8
Distal Level		
None	304 (72.9)	68.4 - 76.9
1 activity	90 (21.6)	17.8 - 25.8
2 activities	23 (5.5)	3.6 – 8.1

Table 2. Matrix of correlations between sociodemographic variables, UI, control/autonomy (C/A) and levels of social participation. FIBRA Study, Older adults, Campinas and Ermelino Matarazzo, SP, Brazil, 2016/2017.

Variables	1	2	3	4	5	6	7	8	9
1. Age	1								
2. Sex	-0.10*	1							
3. Education	0.07	0.07	1						
4. UI	0.00	0.04	0.06	1					
5. C/A	0.04	0.02	0.14**	-0.21**	1				
6. Proximal	0.00	0.07	0.02	-0.11*	0.17**	1			
7. Mediated	-0.13**	0.12*	0.24**	-0.11*	0.18**	0.22**	1		
8. Intermediary	-0.08	0.16*	0.13*	-0.08	0.22**	0.35**	0.25**	1	
9. Distal	-0.10*	0.02	0.09	-0.03	0.15**	0.18**	0.06	0.33**	1

*p<0.05;**p<0.01.

Sex, age, and education level were tested as covariates in the path analysis between UI, control/autonomy, and social participation. After the second review and the removal of non-significant paths between the variables, acceptable values were obtained for all the adjustment criteria of the proposed model. Figure 2 shows the paths tested that remained in the final relationship model (R^2 =0.16). The values for the tests were: chi-square =0.14; chi-square ratio (X^2/GL) =0.00; SRMR (standardized root mean square residual) =0.03; RMSEA (root mean square error of approximation) =0.03; CFI (comparative fit index) =0.97; and TLI (Tucker-Lewis index) =0.94.

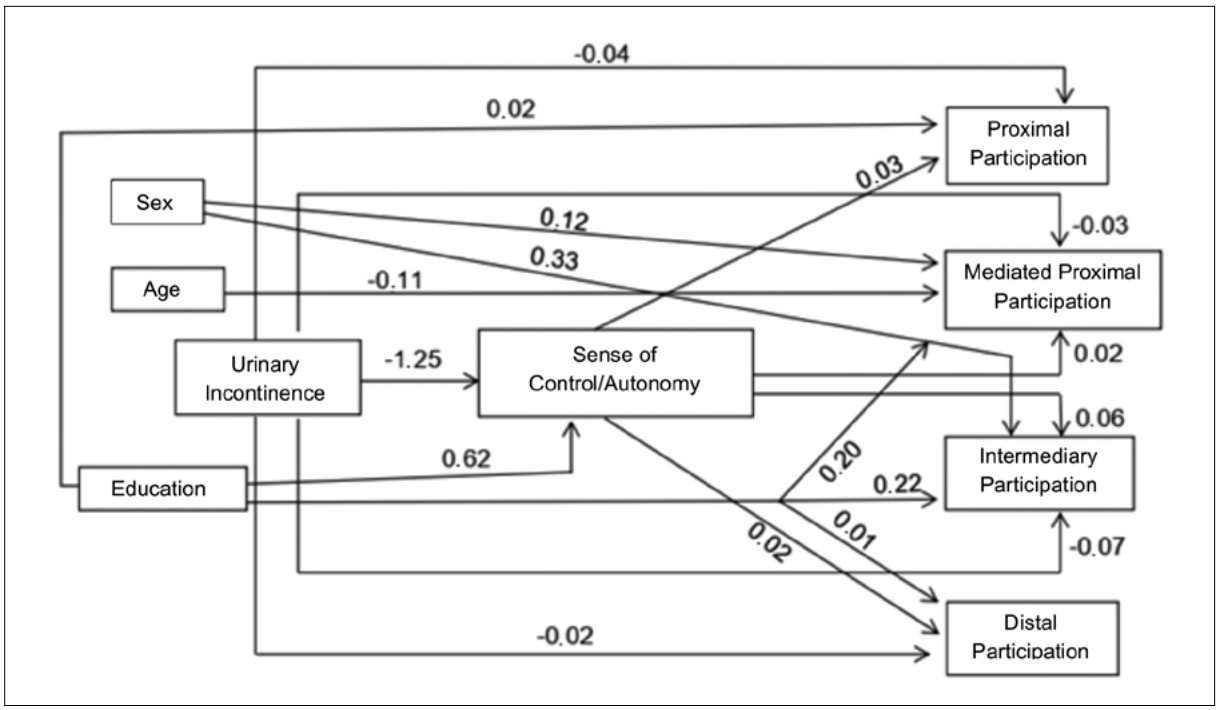

Figure 2. Diagram representing the significant associations between the variables tested via path analysis. FIBRA Study, Older adults, Campinas and Ermelino Matarazzo, SP, Brazil, 2016/2017.

In tests of direct effects, the sense of control/autonomy was affected by UI (β =-0.17; p <0.01), it affected all levels of social participation (p<0.01) and showed no indirect effect that suggested it was a mediator of indirect relationships between these variables. The tests of indirect effects between the variables determined that UI acted as a mediator variable of the indirect relationships between education and all levels of social participation (Figure 3).

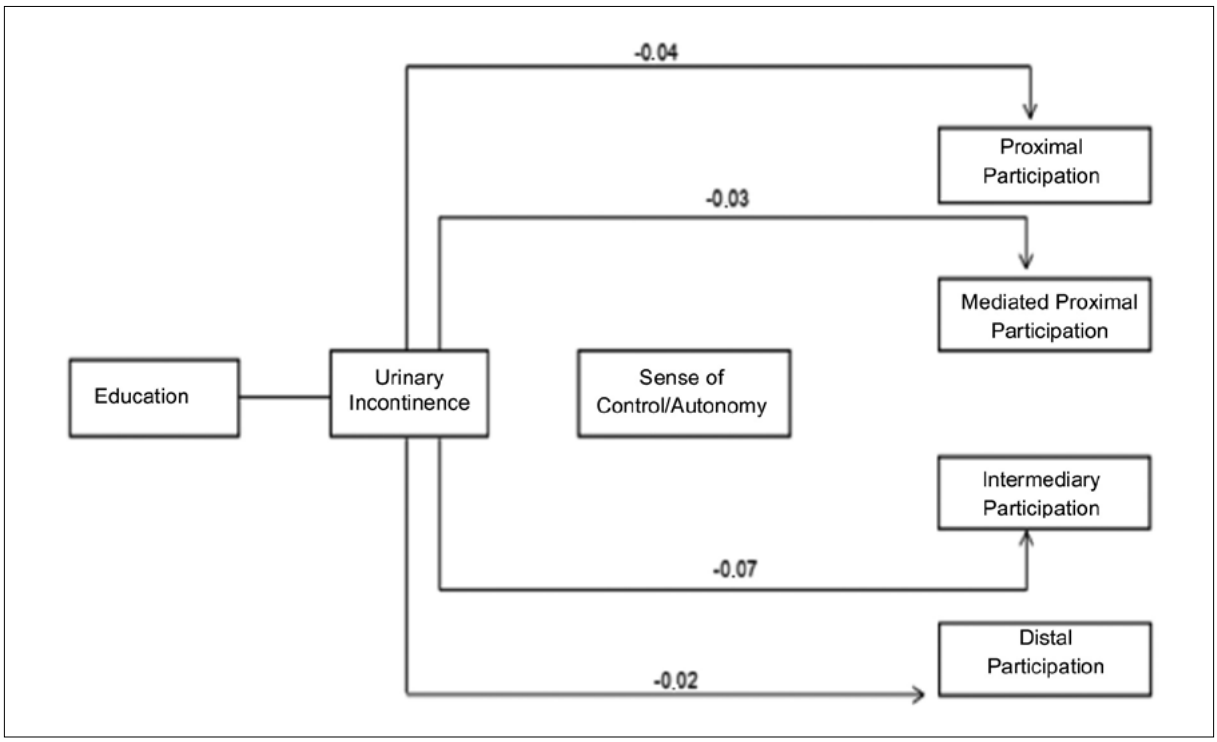

Figure 3. Diagram representing the indirect effects between the variables under study. FIBRA Study, Older adults, Campinas and Ermelino Matarazzo, SP, Brazil, 2016/2017.

DISCUSSION

With a percentage similar to that reported in review studies[1-6], UI was shown to be quite frequent among community-dwelling older adults, with evidence of repercussions on social participation.

Using a single item survey of signs and symptoms in the population, 38% of the sample reported the occurrence of involuntary loss of urine in the last 12 months. This percentage is within the range of 29.6% to 45.4% estimated by a meta-analysis study on the prevalence of UI in older adult women. There were differences in the prevalence of UI between the sexes (41% female versus 31% male). However, despite being significant, it did not present the same magnitude observed in studies that showed that UI prevalence among men is about half that among women[1-4]. Considering the sample composition regarding the variable sex, the fact that the men were older than the women may have contributed to the high prevalence of UI among men in this study.

The prevalence of UI in men tends to be higher with advancing age. In a study by Kessler et al.[34] involving Brazilian older adults, they reported that men over 75 years of age have a UI prevalence of 17.9% and an odds ratio of 4.61 (1.97-10.79) compared with men aged between 60 and 64 years old. Women aged 75 years and over had a prevalence of 33.8% and an odds ratio of 1.69 (1.26-2.27) compared with women aged 60 to 64 years old.

Other interesting characteristics of the sample were revealed by examining the correlations performed. An increase in age was associated with a reduction in participation in technology-mediated proximal activities and distal activities. These two types of participation involve activities that demand greater physical and cognitive functionality. With regard to technology-mediated activities, less inclusion, fewer cognitive resources and less developed digital skills are common among older cohorts, reducing the chances of maintaining social participation through mobile devices or personal computers[10,16]. Greater demand for attention, memory and speed in processing information can reduce involvement with technologies, even in cognitively healthy cohorts[19]. Distal activities generally involve offering and exchanging social capital, that is, knowledge, skills, socio-emotional and physical resources, greater use of time and more geographical displacements[10,11,16,23,24].

Female sex and a higher level of education were associated with continued participation in technology-mediated activities and intermediary level activities. Older adult women tend to report greater participation in activities outside the home, which involve leisure and socialization, such as those that take place at parties, clubs, churches or social centers[11,12].

Higher education level among the older adults also revealed a correlation with a greater sense of control/autonomy. Education increases access to information, opportunities and income to maintain social activities carried out outside the home or mediated by technology, as well as benefiting levels of confidence in the individual's own abilities. Control/autonomy measurements were correlated with the maintenance of social participation at all levels, corroborating the literature that argues that this is an important resource in promoting social functioning[23]. The presence of UI was correlated with a decrease in this resource and a reduction in participation in proximal and mediated proximal activities. Since this usually involves the most intimate circle of social relationships, this level of participation is highly affected by psychological factors of a motivational and emotional nature, and has been shown to decrease in cases of depression and loneliness[16,26-28].

The proposition of a model of associations between the variables under study enabled us to specify a logic of action and influence between the variables, while also revealing the influence of variables that are not correlated in analyzes of this nature.

Based on the initial hypothetical model, all variables of interest remained present in the model, with the variables age and sex showing the lowest number of associations with the remainder. Among the sociodemographic variables, education was associated with a greater number of variables. Controlled for the remaining variables, education positively affected all levels of social participation. Education was associated with a sense of control/autonomy (β=0.62) at a greater magnitude, suggesting that it is an important life course variable for maintaining this psychological resource, when facing of the challenges of old age.

Educational level is considered as one of the components of personal and social development and, as such, plays a central role in inequalities and inequities in health and quality of life[28]. In the review study by Batmani et al.[1], high education levels were relevant in reducing the incidence of UI in four studies reviewed. It is interesting to note, however, that although education was not associated with the presence of UI in the multiple relationships, in the analysis of indirect effects, the effects of education on levels of social participation were mediated by the presence of UI. These results suggest that educational inequalities in social participation can be amplified by the presence of UI[28].

In the model tested, all levels of participation were affected by UI, although the associations were of weak magnitude. This suggests the role of other variables in determining social participation. Clinical and epidemiological literature reports that UI usually manifests in the context of other chronic diseases and changes in physical and cognitive functionality[1,4].

The magnitude of the influence of UI on the sense of control/autonomy confirms its potential to act negatively on assessments individuals make concerning themselves and their competences in the exercise of personal agency[4]. Curtis, Huxhod and Windsor[23] identified robust longitudinal associations

between a sense of control and social participation in a study conducted with 114,126 middle-aged and older German adults (40-78 years old). The results supported evidence of causality for perceived sense of control in analyzes based on data collected on three occasions. According to the authors, perceived control can promote participation among older adults, since it affects their sense of confidence in their ability to achieve results, a greater propensity to choose more complex activities, greater persistence and the use of strategies to overcome challenges.

Although it revealed important associations with both phenomena, in this study, analysis of the indirect effects between the variables did not support the hypothesis of control/autonomy acting as a psychological mediator between UI and social participation. It is possible that other subjective aspects, such as self-factors for such mediation[34]. Despite this, the potential of proposing and testing association models in the study of the repercussions of UI was evident. Social participation in old age is a complex, multi-determined phenomenon. Despite this, the model explained 15% of the data variability. The paths that remained significant, together with the identification of indirect effects, suggest applications within the scope of decisions and practices of care for older adults and the promotion of active aging.

Based on the modifiable factors present in the model, social participation can be stimulated, considering contextual, life course, health and psychological factors. Strategies that aim to increase current knowledge concerning older adults and UI as a treatable and/or manageable condition and access to pharmacological and non-pharmacological strategies can have a positive impact on the assessments that older adults make concerning themselves, their own aging, and their opportunities for remaining socially active[4,35].

There is evidence of efficacy and positive clinical responses regarding the use of isolated or combined non-pharmacological strategies to manage UI in older adults[5]. These involve support in behavioral changes and hygiene routines, strengthening of the pelvic floor muscles in the context of educational guidance, the reorganization of routines, use of support devices and psychological encouragement[35]. Psychosocial strategies that involve opportunities to restructure beliefs and attitudes about the self can have repercussions on an individual's level of social participation.

Considerations should be made in view of the potential methodological limitations of the study. Although the use of path analysis specifies relationships and demonstrates advantages, its application on data collected in a cross-sectional design means we cannot make claims regarding causality. Another critical observation is that the sample was composed solely of older adults with no cognitive deficit suggestive of dementia, a condition strongly associated with UI and with important implications in understanding social participation. We recommend that future studies invest in longitudinal data and the inclusion of other relevant variables, like cognitive deficits, to increase the explanatory and predictive power of the model.

CONCLUSION

This test of an association model shows that the presence of UI contributes to restrictions in social participation. Assessments that older adults make regarding the degree to which they perceive themselves to exert control and autonomy over their life were also negatively influenced by the presence of UI. The presence of UI potentiated the disadvantageous relationships between educational level and social participation. Although associated with both phenomena, measurements of control/autonomy were not shown to be a mediating variable in the relationship between UI and social participation.

The theoretical investment in strengthening multidimensional models to explain the psychosocial repercussions of UI in older adults could produce pathways for interventions in the modifiable factors of this condition.

Edited: Marquiony Marques dos Santos

REFERENCES

1. Batmani S, Jalali R, Mohammadi M, & Bokaee S. Prevalence and factors related to urinary incontinence in older adults women worldwide: a comprehensive systematic review and meta-analysis of observational studies. BMC Geriatr. 2020; 21(1):1-17. doi:10.1186/s12877-021-02135-8
2. Moon S, Chung HS, Kim YJ, et al. The impact of urinary incontinence on falls: A systematic review and meta-analysis. PLoS One. 2021;16(5):e0251711. doi:10.1371/journal.pone.0251711
3. Ulrich V, Alexander S, Bós AJG. Quality of life and mortality of Brazilian nonagenarians and centenarians with urinary incontinence. PAJAR, Pan Am. J. Aging Res. 2020; 8(1):e38763-e38763. doi:10.15448/2357-9641.2020.1.38763
4. Pizzol D, Demurtas J, Celotto S, et al. Urinary incontinence and quality of life: a systematic review and meta-analysis. Aging Clin Exp Res. 2021;33(1): 25-35. doi:10.1007/s40520-020-01712-y
5. World Health Organization. Guidelines on Integrated Care for Older People (ICOPE). Guidelines on community-level interventions to manage declines in intrinsic. Disponível em https://www.who.int/ageing/publications/guidelines-icope/en. Acessado em 05 de outubro de 2021.
6. McDaniel C, Ratnani I, Fatima S, Abid MH, Surani S. Urinary Incontinence in Older Adults Takes Collaborative Nursing Efforts to Improve. Cureus. 2020;12(7):e9161. doi:10.7759/cureus.9161
7. Corrado B, Giardulli B, Polito F, Aprea S, Lanzano M, Dodaro C. The impact of urinary incontinence on quality of life: A cross-sectional study in the Metropolitan City of Naples. Geriatrics (Basel). 2020;5(4):96. doi:10.3390/geriatrics5040096
8. Yip SO, Dick MA, McPencow AM, Martin DK, Ciarleglio MM, Erekson EA. The association between urinary and fecal incontinence and social isolation in older women. Am J Obstet Gynecol. 2013;208(2):e1146-e1467. doi:10.1016/j.ajog.2012.11.010
9. Bartoli S, Aguzzi G, & Tarricone R. Impacto na qualidade de vida da incontinência urinária e bexiga hiperativa: uma revisão sistemática da literatura. Urology. 2010;75 (3):491-500. doi:10.1016/j.urology.2009.07.1325
10. Cheng S, Lin D, Hu T, et al. Association of urinary incontinence and depression or anxiety: a meta-analysis. J Int Med Res. 2020;48(6):300060520931348. doi:10.1177/0300060520931348
11. Levasseur M, Richard L, Gauvin L, Raymond E. Inventory and analysis of definitions of social participation found in the aging literature: proposed taxonomy of social activities. Soc Sci Med. 2010;71(12):2141-2149. doi:10.1016/j.socscimed.2010.09.041
12. World Health Organization. The decade of healthy ageing. Geneva: World Health Organization; 2020 . Disponível em https://www.who.int/ageing/decade-of-healthy-ageing Acessado em 10 de julho de 2021
13. Morsch P, Pereira GN, Navarro JH, Trevisan MD, Lopes DG, Bós ÂJ. Características clínicas e sociais determinantes para o idoso sair de casa Clinical characteristics and social determinants in a sample of non-homebound elderly. Cad Saude Publica. 2015; 31(5):1025-1034.doi:10.1590/01021-311X00053014
14. Fultz NH, Fisher GG, Jenkins KR. Does urinary incontinence affect middle-aged and older women's time use and activity patterns? Obstet Gynecol. 2004;104(6):1327-1334. doi:10.1097/01.AOG.0000143829.21758.3c
15. Alshammari S, Alyahya MA, Allhidan RS, Assiry GA, AlMuzini HR, AlSalman MA. Effect of urinary incontinence on the quality of life of older adults in Riyadh: Medical and sociocultural perspectives. Cureus. 2020;12(11):e11599. doi:10.7759/cureus.11599
16. Takahashi K, Sase E, Kato A, Igari T, Kikuchi K, Jimba M. Psychological resilience, and active social participation among older adults with incontinence: a qualitative study. Aging Ment Health. 2016;20(11):1167-1173. doi:10.1080/13607863.2015.1065792
17. Avery JC, Braunack-Mayer AJ, Stocks NP, Taylor AW, Duggan P., Taylor AW, Stocks NP. 'It's our lot': how resilience influences the experience of depression in women with urinary incontinence. Health Sociol Rev. 2015; 24(1): 94-108. doi: 10.1080/14461242.2015.1007512
18. Hagglund D, Ahlstrom G. The meaning of women's experience of living with long-term urinary incontinence is powerlessness. J Clin Nurs. 2007;16(10):1946–54. doi:10.1111/j.1365-2702.2007;01787.x
19. Duppen D, Lambotte D, Dury S, et al. Social participation in the daily lives of frail older adults: Types of participation and influencing factors. J Gerontol B Psychol Sci Soc Sci. 2020; 75(9):2062-2071. doi:10.1093/geronb/gbz045H

20. Hyde M, Wiggins RD, Higgs P, Blane DB. A measure of quality of life in early old age: the theory, development and properties of a needs satisfaction model (CASP-19). Aging Ment Health. 2003;7(3):186-94. doi: 10.1080/1360786031000101157

21. Neri AL, Borim, RSA, Batistoni SST, Cachioni M, Rabelo DF, Fontes AP, Yassuda MS.Nova validação semântico-cultural e estudo psicométrico da CASP-19 em adultos e idosos brasileiros. Cad. Saúde Pública 3(10); 2018).doi.org/10.1590/0102-311X00181417

22. Hyde M, Higgs P, Wiggins RD, Blane D. A decade of research using the CASP scale: key findings and future directions. Aging Ment Health. 2015 Jul;19(7):571-5. doi: 10.1080/13607863.2015.1018868.

23. Curtis RG, Huxhold O, Windsor TD. Perceived control and social activity in midlife and older age: A reciprocal association? Findings from the German Ageing Survey. J Gerontol B Psychol Sci Soc Sci. 2018;73(5):807-815. doi:10.1093/geronb/gbw070

24. Vozikaki M, Linardakis M, Micheli K, & Philalithis A. Activity participation and well-being among European adults aged 65 years and older. Soc Indic Res. 2017;131(2): 769-795. doi: 10.1007/s11205-016-1256-y

25. Marques LP, Schneider IJ, d'Orsi E. Quality of life and its association with work, the Internet, participation in groups and physical activity among the elderly from the EpiFloripa survey, Florianópolis, Santa Catarina State, Brazil. Cad Saude Publica. 2016;32(12):e00143615. doi:10.1590/0102-311X00143615

26. Lee HY, Rhee Y, Choi KS. Urinary incontinence and the association with depression, stress, and self-esteem in older Korean Women. Sci Rep. 2021;11(1):9054. doi:10.1038/s41598-021-88740-4

27. Avery JC, Braunack-Mayer AJ, Stocks NP, Taylor AW, Duggan P. Psychological perspectives in urinary incontinence: a metasynthesis. OA Women's Health. 2013;1(1):1–10. doi: 10.13172/2053-0501-1-1-662

28. Arpino B, Solé-Auró A. Education inequalities in health among older European men and women: The role of active aging. J Aging Health. 2019;31(1):185-208. doi:10.1177/0898264317726390

29. Brucki SMD, Nitrini R, Caramelli P, Bertolucci PHF, Okamoto IH. Sugestões para o uso do mini-exame do estado mental no Brasil. Arq Neuropsiquiatr. 2003;61(3):777-81. doi:10.1590/S0004-282X2003000500014

30. Reuben DB, Laliberte L, Hiris J, Mor V. A hierarchical exercise scale to measure function at the Advanced Activities of Daily Living (AADL) level. J Am Geriatr Soc. 1990;38(8):855-861.

31. Baltes MM, Mayr U, Borchelt M, Maas I, Wilms H-U. Everyday competence in old and very old age: An inter-disciplinary perspective. Ageing Soc. 1993;13(4):657-80. doi:10.1111/j.1532-5415.1990.tb05699.x

32. Acock AC. Discovering Structural Equation modeling using Stata. College Station. Texas: Stata Press; 2013.

33. Kessler M, Facchini LA, Soares MU, Nunes BP, França SM, Thumé E. Prevalence of urinary incontinence among the elderly and relationship with physical and mental health indicators. Rev. Bras. Geriatr. Gerontol. 2018;21(4):397-407. doi: 10.1590/1981-22562018021.180015

34. Achdut N, Sarid O. Socio-economic status, self-rated health and mental health: the mediation effect of social participation on early-late midlife and older adults. Isr J Health Policy Res. 2020;9(1):4.doi: 10.1186/s13584-019-0359-8

35. Townsend BG, Chen JT, Wuthrich VM. Barriers and facilitators to social participation in older adults: A systematic literature review. Clin Gerontol. 2021;44(4):359-380. doi:10.1080/07317115.2020.1863890