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Preventing falls Guidelines for Elderly in Thailand

[1] Monrudee Popijan; [2] Wipakon Sonsnam; [3] Muntanavadee Maytapattana

Abstract

This paper is based on critically derived new ways and behavioral patterns to prevent fall incidents among Thai elderly. In order to justify this problem statement, an online survey-based quantitative research is conducted where randomly five-point Likert scale based questionnaires are distributed among the professionals of this nursing field, where only 309 of them give the valid outcomes. After implementing the structural equation modeling in statistical analysis, it becomes concluded that there is a significant relationship between the activities performed after fall episode and preventing fall in elderly, and between communication to health technicians of the institution and preventing fall in elderly by considering the moderating role of elderly self-care behavior. This informative research will be an attractive source to upgrade nursing training programs. In addition, there are some limitations regarding the study data collection and its studied population, which can be overcome by upcoming researchers.

Keywords: Preventing falls, Guidelines for Elderly, Thailand

1 Introduction

In Thailand, there are a large number of adults who faced many issues regarding the fall episode in their lives; and to overcome this ratio, many physicians, psychologists and doctors are working (Dillon et al., 2017). Some common factors mostly lead to fall named as balance and gait, medications, vision, environment, and chronic conditions (Kittichittipanich & Kusoom, 2019; Romli et al., 2017; ขวัญ, เงิน, ลัย, & ขัดตา, 2018). There are also some steps to consider to prevent the fall in the elderly stage like enlist the support to take a simple step to stay safe, ask about the last eye checkup, discuss the current health condition, talk about proper medication and do a walk through a safety assessment of home (Dillon, Duffy, Tiedemann, & Keay, 2018).

Startling Statistics of Older Adult Falls	
An adult dies from a fall-related injury	every 20 minutes
An older adult is treated in the ER for a fall	every 13 seconds

Table 1: Startling Statistics of Older Adult Falls

The above table shows the statistics of older adult falls within a developing state (Nazarko, 2016). Also, it's falling related statistics are shown in the following figure (Parks, Osevala, & Westcott, 2018);

[1] Suan Sunandha Rajabhat University, Thailand.
[2] Suan Sunandha Rajabhat University, Thailand.
[3] Suan Sunandha Rajabhat University, Thailand.

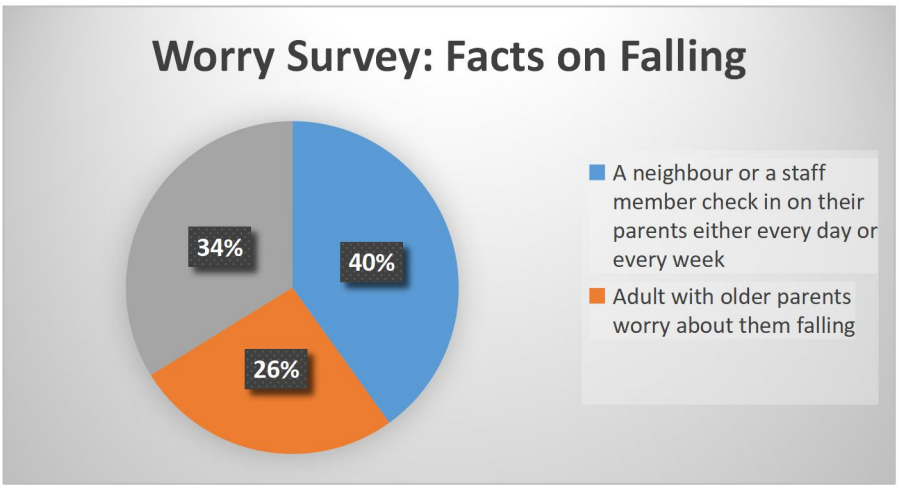


Figure 1: Worry Survey: Facts on Falling

The problem statement of this paper is to understand how the professional practices and behaviors after the fall episode impact on preventing the fall in elderly people by specifically considering the elderly self-care behavior as a moderating variable.

In the previous scholar's work, there is a major research gap regarding the prevention of fall episodes of an adult which is specifically covered in this paper. Like the previous scholars specifically worked on correlating the falls among the community-dwelling elderly in Thailand perspective, critically view and expect the community-dwelling among Thai elderly in their primary care physicians and also driving different ways to prevent the fall episode (Boongird & Ross, 2017; Maneeprom, Taneepanichskul, Panza, & Suputtitada, 2019; Phungdee, Wattanathamrong, & Sirisopon, 2020; Worapanwisit, Prabpai, & Rosenberg, 2018). But nobody majorly focused on activities performed and communication to health technicians in their after fall episode to resolve their fall episode, which is specifically targeted through this paper. The major objectives of this paper are;

- To critically analyze the influence of professional practices and behavior after fall episode on preventing the fall in elderly from Thailand perspective.
- To critically evaluate the impact of activities performed after fall episode on preventing falls in the elderly.
- To critically evaluate the impact of communication on health technicians of institutions on preventing falls in the elderly.
- To critically evaluate the moderating role of elderly self-care behavior between activities performed after the fall episode and preventing falls in the elderly.
- To critically evaluate the moderating role of elderly self-care behavior between communications to health technicians of institutions and preventing falls in the elderly.

This paper is an informative approach for the related field professionals and scholars to understand how the activities performed after fall episode and the other communication to health technicians effectively impact on overcoming the influence of fall dilemma on adult personality. Also, this is a challenging approach to give a new direction to the academics to understand the self-care behavior major impact on a person's ability to sustain in a challenging situation.

2 Literature Review

2.1 Self-Care Theory

In general, the researchers majorly relied on the general behavioral change theories in their studied articles to examine the self-care (Younas, 2017). Within this broader theoretical approach, there are many models named as social learning theory, transtheoretical model of behavioral change, and the reasoned action theory (Boonroungrut & Fei, 2018; Friman, Huck, & Olsson, 2017; Medlock & Wyatt, 2019). This self-care theory is such a conceptual theory that specifically helps to understand the managed care environment through which the nursing intervention occurs. In a learning approach, this self-care approach motivates a person to maintain their confidence in each good and hard situation of life (Jaarsma, Cameron, Riegel, & Stromberg, 2017). According to the scholars, the difference and motivation of individuals play a significant role in examining the decisions to initiate and sustain the self-care behaviors (Baydoun, Barton, & Arslanian-Engoren, 2018; Jaarsma et al., 2020; Saad et al., 2018). This theoretical approach is mostly linked with medical science journals where a

person made a decision and action that he can take to cope with a health problem or have to sustain his position and improve his health. It also deals with the Psychological care of the elderly in signs of stress, depression, low self-esteem, preventing and coping with stress, lack of sleep, hormone imbalance and erectile dysfunction, etc. (Canjuga, Železnik, Neuberg, Božicevic, & Cikac, 2018).

2.2 Activities Performed after Fall Episode and Preventing Fall in Elderly

In the Archives of Gerontology and Geriatrics, Natalia Boneti Moreira and others (2018) critically examine the functional capacity and physical activity level that differs between the non-fallers and fallers old adults by controlling the fall risk awareness. The fall risk awareness, functional capacity and physical activity differ between the fallers and non-fallers by controlling for age. According to their outcomes, the overall incidence of falls was high by 40.2% and falls the risk awareness scores with age. On the base of the significant P values, they concluded that risk of fall vary in different age and is reduced with the age but much higher in the age of adults. According to them, age, physical activity level, functional capacity and fall risk awareness is the best predictor of falls among the older adults (Moreira, Rodacki, Pereira, & Bento, 2018). In addition, Yong-Hao Pua with others stated that risk for falls in older adults has been linked with postural balance and fall efficacy. In their research, they specifically examine the interaction between both these factors and their association with the future fall by critically examine the relationship between fall efficacy and gait decline. According to their result based statistics, fall efficacy modified the linkage between postural balance and fall risk (Maqbool, Hameed, & Habib, 2018; Pua, Ong, Clark, Matcher, & Lim, 2017; Alqahtani, 2019). Hence, the following hypothesis has been proposed;

H1: There is a significant relationship between Activities Performed after Fall Episode and Preventing Fall in Elderly

2.3 Communication to Health Technicians of Institutions and Preventing Fall in Elderly

In order to critically understand the importance of health technicians' communication on preventing the elderly fall, many scholars explored their understanding regarding this concept. In 2016, Lili Liu and others specifically made a systematic review of technology readiness for smart home and health monitoring technologies which is generally low. According to them, there is a high level of cognitive and mental health, and monitoring function with minimal evidence technology in order to predict the disability, reduces falls and enhanced the quality of life (Liu, Stroulia, Nikolaidis, Miguel-Cruz, & Rincon, 2016). Also, Corinna Ogaonowshi and others stated that if proper counseling is given to the adult patient in his depression phase, then it will be more chances to prevent their falling phase. They specifically considered the information and communication technology-based support system to prevent the fall and its risk assessments. According to them, falls and their consequences are important events for a transition from the individual living to the institutional care for adult adults (Ogonowski et al., 2016). After critically evaluate the previous researches work on these tested variables, the hypothesis has been proposed;

H2: There is a significant relationship between Communication to Health Technicians of Institutions and Preventing Fall in Elderly

2.4 Moderating Role of Elderly Self-Care Behavior between Activities Performed after Fall Episode and Preventing Fall in Elderly

It's true that efficient self-care behavior significantly enhanced the individual confidence to actively perform in the diverse situation of life. Like in 2019, a systematic review is made by scholars on the fall prevention of self-management among older adults. According to these scholars, adequate self-management can easily minimize the negative impact of falls in older adults. In their research, they studied the personal characteristics of older adults who engage in the fall prevention of self-management behavior and action (Schnock, Howard, & Dykes, 2019). In 2018, the researchers critically stated that falls are considered as the major cause of injury-related morbidity among older adults. Their aim is to critically consider the effectiveness and harm of fall prevention interventions in community-dwelling based older adults. According to them, the self-care behavior is an efficient source prevents the fall in elderly age (Guirguis-Blake, Michael, Perdue, Coppola, & Beil, 2018). Therefore, the following hypothesis has been suggested;

H3: Elderly Self-Care Behavior acts as a significant moderator between Activities Performed after Fall Episode and Preventing Fall in Elderly

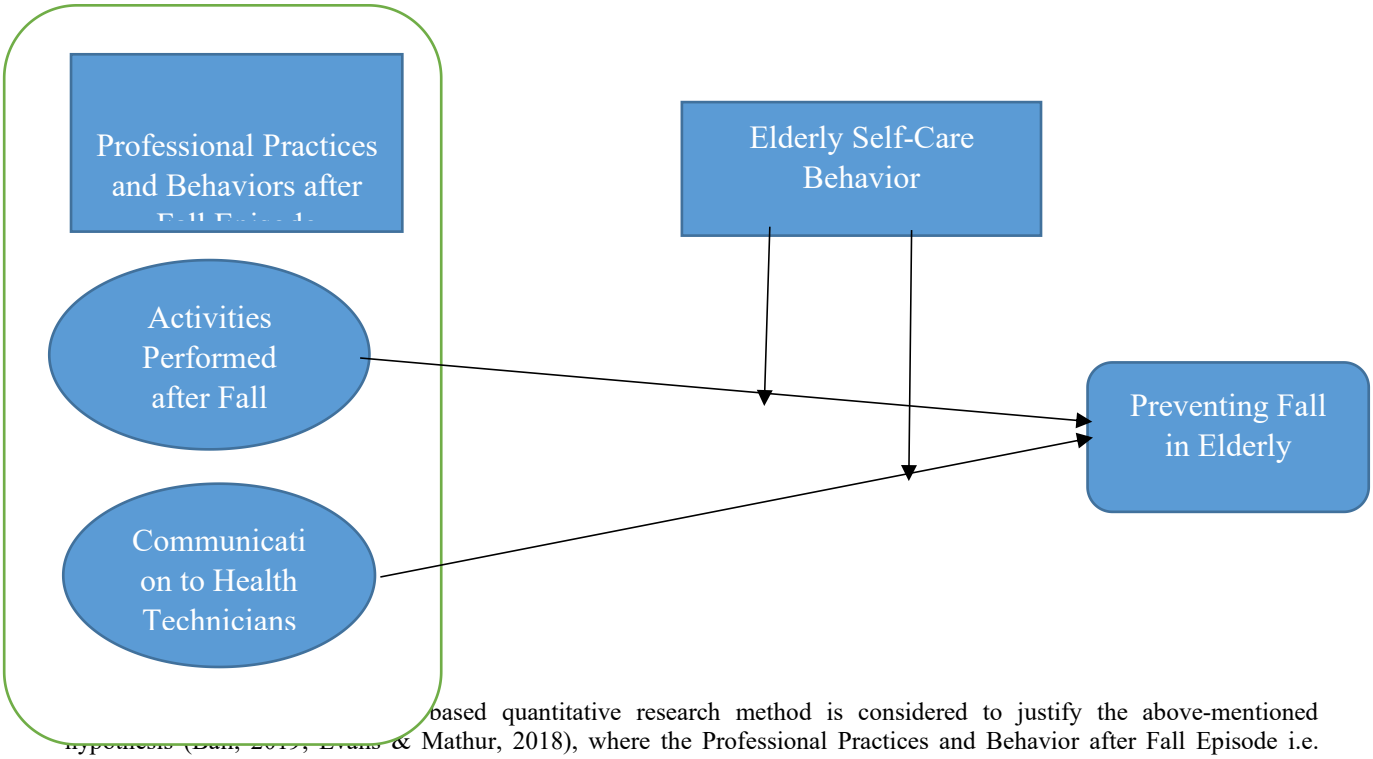
2.5 Moderating Role of Elderly Self-Care Behavior Communication to Health Technicians of Institutions and Preventing Fall in Elderly

According to Barbara Riegel with others, the self-care plays a significant role in preventing and managing the different physical and psychological disease of a person. They stated that self-care is such a naturalistic decision-making process

that addresses both management and prevention of chronic illness with the major element of self-care monitoring, self-care maintenance, and self-care management. They concluded that self-care plays a significant role to achieve the treatment plan's goal and enhanced the adult attitude to overcome this fall situation (Riegel et al., 2017). In the same year (2017), Siasy Manindanchi stated that assistive technology plays a significant role to support the self-care of elderly people at home. They stated that the rapid increase of aging population in developed states results in the creation of many problems among its people to fulfill their daily needs. Their research was an informative approach to examine the option of assistive technology to support the self-care ability of elderly people and overcome the Burdon of their home care providers by facilitating the organized way of care service delivery. According to them, technology understanding is the best way to maintain the cognitive and physical functioning of technology that results in enhancing the life quality of elderly people (Sisay, 2017; Egbuniwe, 2019). Also, the other scholars stated that mortality, scabies, diarrheal disease, and falls are the major factors that cause a direct impact on the individual's understanding. According to their statistical analysis based outcomes, the health indicators revealed a high incidence of falls and scabies, and a high prevalence of pressure ulcer. They stated that the identification of less optimal rates for the performance indicators can significantly help to improve the nursing care. Hence, the following hypothesis has been proposed;

H4: Elderly Self-Care Behavior acts as a significant moderator between Communication to Health Technicians of Institutions and Preventing Fall in Elderly

Figure 2: Theoretical Framework



based quantitative research method is considered to justify the above-mentioned hypothesis (Bali, 2019; Evans & Mathur, 2018), where the Professional Practices and Behavior after Fall Episode i.e. Activities Performed after Fall Episode and Communication to Health Technicians Institutions are studied as major independent variables. While, the Preventing Fall in Elderly is considered as a dependent variable and Elderly Self-Care Behavior is studied as a moderating variable in this framework. The respondents are based on their nursing staff, doctors, and caretakers who having full information regarding the practice and behavior to reduce these falling incidents.

To collect the relevant data, 400 questionnaires were distributed among the targeted respondents where only 309 of them gave a valid outcome. Their demographic-based statistical analysis is based on age, education, and gender that helps to categorize the respondents. According to the survey-based results, there are 162 males (52%) and 147 (48%) females, it means the majority of males gave their valid experience-based outcomes. After this, their education based demographics show that 12% of individuals are graduates in this field of study, 43% are postgraduates, 34% having master degrees, and only 11% of them having Ph.D. level study on the related study. As far as their age-based segregation is concerned, the frequency of individuals who are within the age limit of 21-30 is 73. However, 90 of them are from 31 to 40 years old, 97 of them from 41 to 50 years old, and 49 of them are more than 50 years old. It means the majority of the active

respondents having master and post-graduation degrees in this field and maximum of them are quite energetic and having more understanding to tackle this adverse situation of the adult. To measure the outcomes, the structural equation modeling and moderating analysis based statistical test will be implemented on the survey data so that efficient outcomes will be generated (Civelek, 2018; Hameed, Basheer, Iqbal, Anwar, & Ahmad, 2018; Ramayah, Cheah, Chuah, Ting, & Memon, 2018; Sarstedt, Ringle, & Hair, 2017; Ul-Hameed, Mohammad, & Shahar, 2018; Wang & Wang, 2019).

4 Results and Analysis

In order to make an authentic analysis, the following descriptive statistics show that all the items having the same 0.139 value-based standard error in variable testing. Also, the statistical values of activities performed after the fall episode and preventing falls in the elderly are less deviated from their mean position. While the communication to health technicians of institutions and elderly self-care behavior highly deviates from their means. That means some external variables reduce the occurrence of a desirable outcome, as mentioned below;

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
AcPFExp	309	1.00	4.90	3.5586	1.09222	-.829	.139
ElSelfCB	309	1.00	5.00	3.5184	1.14317	-.707	.139
PreFallEl	309	1.00	5.00	3.5683	1.09753	-.805	.139
CoHeTOI	309	1.00	5.00	3.4501	1.10271	-.611	.139
Valid N (listwise)	309						

Table 2: Descriptive Statistics

After this, the following KMO and Bartlett's test-based statistics show that all the KMO values are within their threshold range with a proper significance value so it becomes clear that this model is a good fit.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.945
Bartlett's Test of Sphericity	Approx. Chi-Square	9516.021
	df	325
	Sig.	.000

Table 3: KMO and Bartlett's test

The following rotated component matrix value shows that all the items having proper rotated component matrix values that are higher than 0.7. It means all the items are effectively uploaded on the testing model, as mentioned below;

	Component			
	1	2	3	4
AP1		.693		
AP2		.777		
AP3		.836		
AP4		.858		
AP5		.838		
AP6		.843		
AP7		.846		
AP8		.847		
SC1			.805	
SC2			.849	

SC3			.840	
PF1				.823
PF2				.855
PF3				.872
CH1	.847			
CH2	.866			
CH3	.873			
CH4	.899			
CH5	.894			
CH6	.888			
CH7	.867			
CH8	.840			
CH9	.852			
CH10	.854			
CH11	.822			
CH12	.849			

Table 4: Rotated Component Matrixa

According to the following convergent and discriminant validity based descriptive outcomes, it becomes clear that all the average variance extracted values of each item are more than 0.5 and the confirmatory reliability values of each item are more than 0.7, it means there is no chance of any convergent validity issue within this mechanism. Also, the decreasing order based bold letters shows that there is no discriminant validity issue occurred within the item uploading process. Its related statistics are shown in the following table;

	CR	**AVE**	**MSV**	**MaxR(H)**	**CH**	**AP**	**SC**	**PF**
CH	0.917	0.778	0.242	0.978	**0.882**			
AP	0.957	0.738	0.356	0.986	0.492	**0.859**		
SC	0.927	0.810	0.356	0.988	0.363	0.597	**0.900**	
PF	0.927	0.809	0.333	0.990	0.433	0.512	0.577	**0.899**

Table 5: Convergent and Discriminant Validity

After this, the model fit indices based statistical values show that the observed value of CMIN/DF is 2.052 (lower than 3), the GFI value is 0.876 (greater than 0.80) and the RMSEA value is 0.058 (greater than 0.08), Well, the both IFI and GFI based CFI indicators show the same value of 0.968 (greater than 0.90). Its tabular and graphical representation is given below;

CFA Indicators	CMIN/DF	GFI	IFI	CFI	RMSEA
Threshold Value	≤ 3	≥ 0.80	≥ 0.90	≥ 0.90	≤ 0.08
Observed Value	2.052	0.876	0.968	0.968	0.058

Table 6: Model Fit Indices

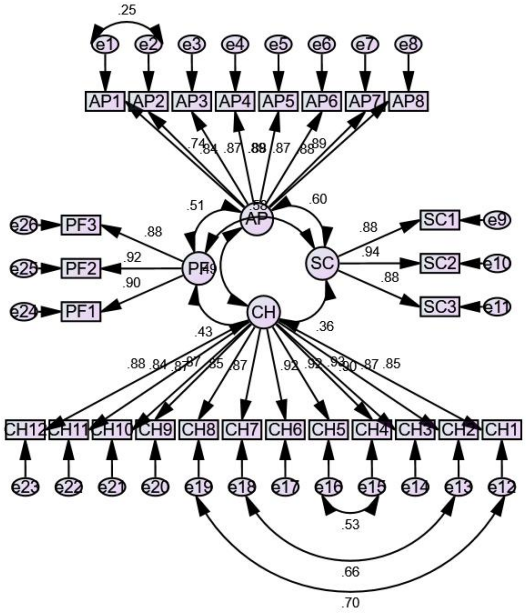


Figure 3: CFA:

After this, the informative SEM-based statistical analysis is shown in the following table where the occurrence of activities performed after fall episode (AP) cause 5.6 deviations in the prevention of fall incident (PF), while the communication to health technicians of institution (CH) cause 5.5% change in the prevention of fall incident. So, overall 37% estimated deviation occurred due to the first independent variable and 24% due to the independent variable, its representation is also mentioned below;

		Regression	Estimate	S.E.	C.R.	P
PreFallEl	<---	AcPFExp	.367	.056	6.628	.000
PreFallEl	<---	CoHeTOI	.243	.055	4.395	.000
		Moderation	Estimate	S.E.	C.R.	P
PreFallEl	<---	APFExESCB_int1	.169	.042	3.675	.000
PreFallEl	<---	CHTIxESCB_Int2	-.003	.041	-.061	.951

Table 7: Structural Equation Modeling

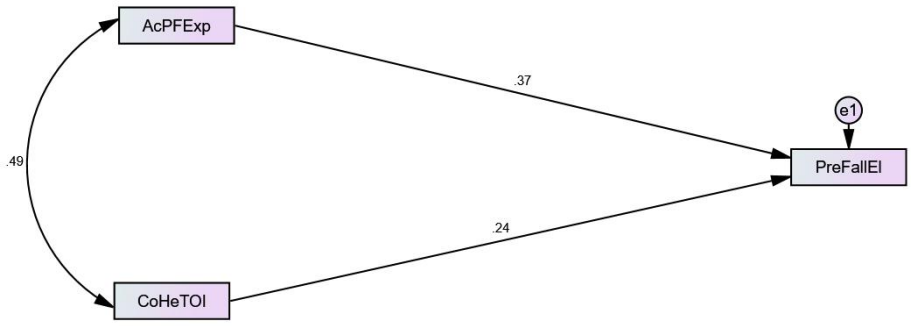


Figure 4: SEM

After this, the moderation analysis based statistical outcomes shows that at the initial stage self-care behavior, the significant relationship is developed among tested variables. While with time at the extreme situation, the productive impact of activities becomes minimize, as shown in the following figure;

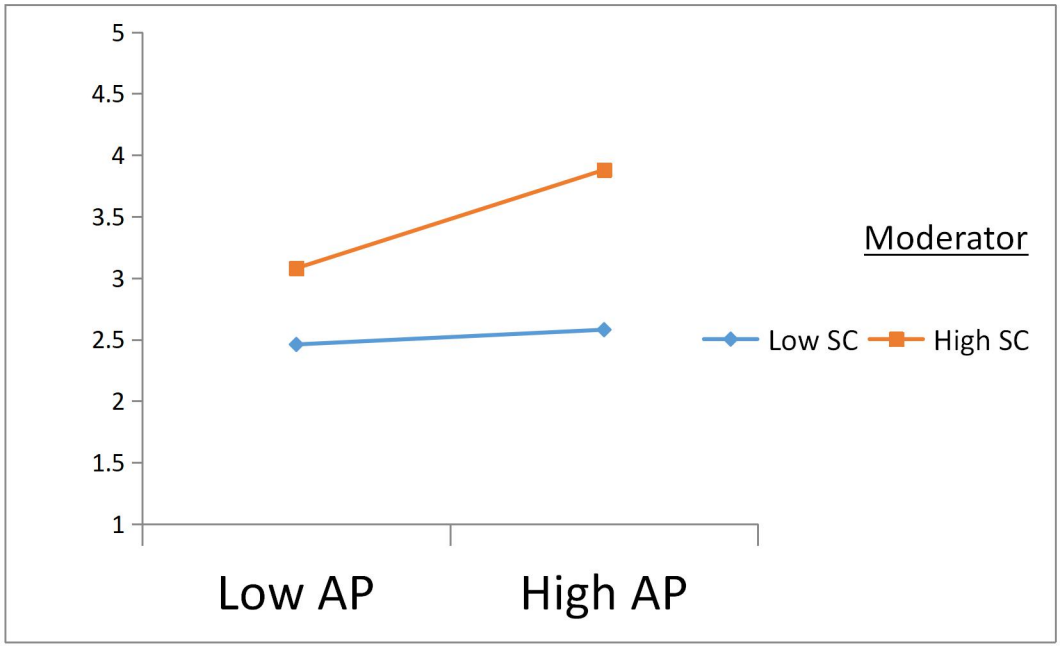


Figure 5: Moderation Analysis of Elderly Self-Care Behavior between PF and AP

According to this moderating figure, there is a weak influence of elderly self-care behavior between the communication to health technician's institutions and preventing falls in the elderly. Its graphical representation is given below;

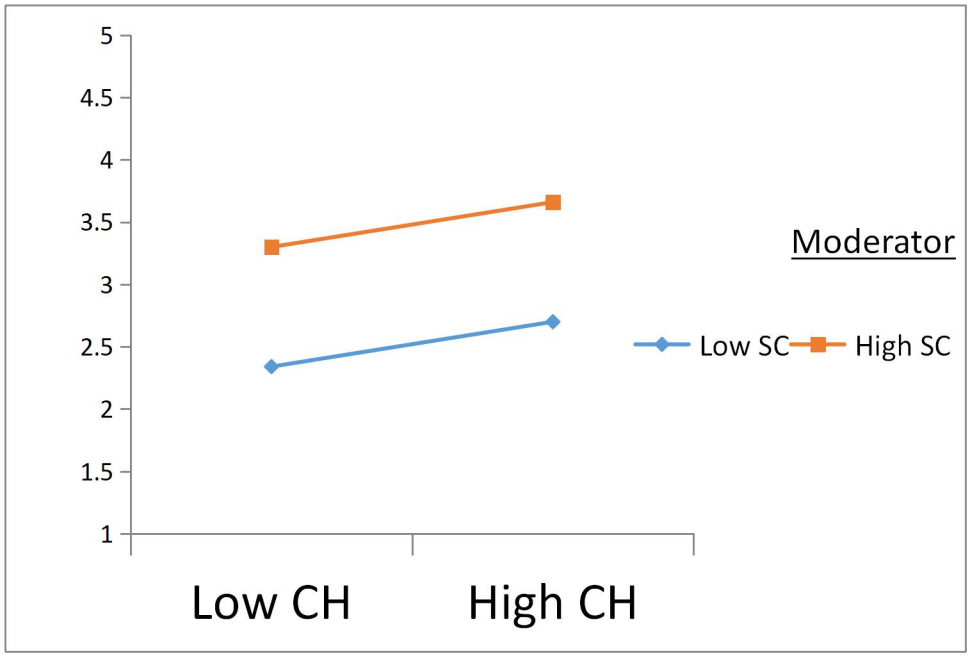


Figure 6: Moderation Analysis Elderly Self-Care Behavior between PF and CH

5 Discussion and Conclusion

5.1 Discussion

According to the above mentioned statistical outcomes, it becomes clear that the activities performed to cover such fall episodes more significant result in the prevention of such incidents, and the self-care mechanism further enhanced their influence. This point was also discussed by other scholars who stated that falls are a major problem in nursing homes due to their high prevalence (Baixinho, Dixe, Madeira, Alves, & Henriques, 2019). Also, they stated that active physical activities and medication result in resolving these fall incidents among the community-dwelling Thai elderly (Maneeprom et al., 2019; Worapanwisit et al., 2018).

5.2 Conclusion

Thus, it becomes concluded that there is a significant impact of activities after the fall episode on preventing fall incidents among adults, where the elderly self-care behavior acts as a strong moderator between these variables. Well, in case of communication to health technicians of the institution, this factor also impacts on prevention mechanism. These SEM-based statistical outcomes show that there is a significant relationship between variables.

5.3 Future Implications

This is informative research for the nursing and clinical staff to enhance their team training process to reduce the falls. They can also utilize this data for the post-fall reporting and action, and also develop advanced preventive measures and health promotion to ensure the specific intervention that may result in reducing the incidents of falls. The related academics can also utilize this valid data for their discussion portion.

5.4 Limitations and Future Researches

This study has some limitations in their study population and data collection instrument. Like the self-administered Likert scale is used that may increase the risk of response tending towards socially desirable outcomes. There is also a need of experience depicting interviews to derive constructive activities to reduce such incidents in nursing practice. These weaknesses may overcome by upcoming scholars.

6 References

Alqahtani, A.S. (2019). Examining the relationship between academic leaders' communication skills and their social media usage. International Journal of Business Tourism and Applied Sciences. 7(2). 75-89.

Baixinho, C. L., Dixe, M. d. A., Madeira, C., Alves, S., & Henriques, M. A. (2019). Falls in institutionalized elderly with and without cognitive decline A study of some factors. *Dementia & neuropsychologia, 13*(1), 116-121.

Ball, H. L. (2019). Conducting online surveys. *Journal of Human Lactation, 35*(3), 413-417.

Baydoun, M., Barton, D. L., & Arslanian-Engoren, C. (2018). A cancer specific middle-range theory of symptom self-care management: A theory synthesis. *Journal of Advanced Nursing, 74*(12), 2935-2946.

Boongird, C., & Ross, R. (2017). Views and expectations of community-dwelling Thai elderly in reporting falls to their primary care physicians: a mixed-methods study. *Journal of applied gerontology, 36*(4), 480-498.

Boonroungrut, C., & Fei, H. (2018). The Theory of Planned Behavior and Transtheoretical Model of Change: a systematic review on combining two behavioral change theories in research. *Journal of Public Health and Development, 16*(1), 75-87.

Canjuga, I., Železnik, D., Neuberg, M., Božicevic, M., & Cikac, T. (2018). Does an impaired capacity for self-care impact the prevalence of social and emotional loneliness among elderly people? *Working with Older People*.

Civelek, M. E. (2018). Essentials of structural equation modeling. *Essentials of Structural Equation Modeling (2018)*.

Dillon, L., Duffy, P., Tiedemann, A., & Keay, L. (2018). Acceptability of fall prevention strategies for older people with vision impairment. *International Journal of Orientation & Mobility, 9*(1), 1-9.

Dillon, L., Duffy, P., Tiedemann, A., Keay, L., Steer, M., & Gallimor, D. (2017). Acceptability of fall prevention strategies for older people with vision impairment. *International Journal of Orientation & Mobility, 9*(1), 22-30.

Evans, J. R., & Mathur, A. (2018). The value of online surveys: A look back and a look ahead. *Internet Research*.

Egbuniwe, J.O. (2019). The Impact of Management Information Systems on the Quality of Management Decisions. International Journal of Business Tourism and Applied Sciences. 7(1), 44-57.

Friman, M., Huck, J., & Olsson, L. E. (2017). Transtheoretical model of change during travel behavior interventions: An integrative review. *International journal of environmental research and public health, 14*(6), 581.

Guirguis-Blake, J. M., Michael, Y. L., Perdue, L. A., Coppola, E. L., & Beil, T. L. (2018). Interventions to prevent falls in older adults: updated evidence report and systematic review for the US Preventive Services Task Force. *Jama, 319*(16), 1705-1716.

Hameed, W. U., Basheer, M. F., Iqbal, J., Anwar, A., & Ahmad, H. K. (2018). Determinants of Firm's open innovation performance and the role of R & D department: an empirical evidence from Malaysian SME's. *Journal of Global Entrepreneurship Research, 8*(1), 29.

Jaarsma, T., Cameron, J., Riegel, B., & Stromberg, A. (2017). Factors related to self-care in heart failure patients according to the middle-range theory of self-care of chronic illness: a literature update. *Current Heart Failure Reports, 14*(2), 71-77.

Jaarsma, T., Strömberg, A., Dunbar, S., Fitzsimons, D., Lee, C., Middleton, S., . . . Riegel, B. (2020). Self-care research: How to grow the evidence base? *International Journal of Nursing Studies*, 103555.

Kittichittipanich, B., & Kusoom, W. (2019). The effectiveness of Tai Chi exercise in improving balance and preventing falls among older adults. *The Open Public Health Journal, 12*(1).

Liu, L., Stroulia, E., Nikolaidis, I., Miguel-Cruz, A., & Rincon, A. R. (2016). Smart homes and home health monitoring technologies for older adults: A systematic review. *International journal of medical informatics, 91*, 44-59.

Maneeprom, N., Taneepanichskul, S., Panza, A., & Suputtitada, A. (2019). Effectiveness of robotics fall prevention program among elderly in senior housings, Bangkok, Thailand: a quasi-experimental study. *Clinical interventions in aging, 14*, 335.

Maqbool, N., Hameed, W., & Habib, M. (2018). Impact of political influences on stock returns. *International Journal of Multidisciplinary Scientific Publication (IJMSP), 1*(1).

Medlock, S., & Wyatt, J. C. (2019). Health Behaviour Theory in Health Informatics: Support for Positive Change. *Studies in health technology and informatics, 263*, 146-158.

Moreira, N. B., Rodacki, A. L. F., Pereira, G., & Bento, P. C. B. (2018). Does functional capacity, fall risk awareness and physical activity level predict falls in older adults in different age groups? *Archives of gerontology and geriatrics, 77*, 57-63.

Nazarko, L. (2016). Falls prevention: let's put an end to startling statistics. *Nursing And Residential Care, 18*(5), 248-251.

Ogonowski, C., Aal, K., Vaziri, D., Rekowski, T. V., Randall, D., Schreiber, D., . . . Wulf, V. (2016). ICT-based fall prevention system for older adults: qualitative results from a long-term field study. *ACM Transactions on Computer-Human Interaction (TOCHI), 23*(5), 1-33.

Parks, K. R., Osevala, N., & Westcott, A. M. (2018). Falls *Fractures in the Elderly* (pp. 53-64): Springer.

Phungdee, T., Wattanathamrong, V., & Sirisopon, N. (2020). The effectiveness of strengthening leg muscles physical exercise promotion program for preventing falls of the elderlies in Thailand. *Interdisciplinary Research Review, 15*(2), 19-23.

Pua, Y.-H., Ong, P.-H., Clark, R. A., Matcher, D. B., & Lim, E. C.-W. (2017). Falls efficacy, postural balance, and risk for falls in older adults with falls-related emergency department visits: prospective cohort study. *BMC geriatrics, 17*(1), 291.

Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. (2018). Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0 *An Updated Guide and Practical Guide to Statistical Analysis*: Pearson.

Riegel, B., Moser, D. K., Buck, H. G., Dickson, V. V., Dunbar, S. B., Lee, C. S., . . . Treat-Jacobson, D. J. (2017). Self-care for the prevention and management of cardiovascular disease and stroke: A scientific statement for healthcare professionals from the American Heart Association. *Journal of the American Heart Association, 6*(9), e006997.

Romli, M., Tan, M., Mackenzie, L., Lovarini, M., Suttanon, P., & Clemson, L. (2017). Falls amongst older people in Southeast Asia: a scoping review. *Public Health, 145*, 96-112.

Saad, A. M., Younes, Z. M., Ahmed, H., Brown, J. A., Al Owesie, R. M., & Hassoun, A. A. (2018). Self-efficacy, self-care and glycemic control in Saudi Arabian patients with type 2 diabetes mellitus: A cross-sectional survey. *Diabetes research and clinical practice, 137*, 28-36.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. *Handbook of market research, 26*, 1-40.

Schnock, K. O., Howard, E. P., & Dykes, P. C. (2019). Fall prevention self-management among older adults: a systematic review. *American journal of preventive medicine, 56*(5), 747-755.

Sisay, M. (2017). The use of assistive technology to support self care of the elderly people at home.

Ul-Hameed, W., Mohammad, H., & Shahar, H. (2018). Microfinance institute's non-financial services and women-empowerment: The role of vulnerability. *Management Science Letters, 8*(10), 1103-1116.

Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*: John Wiley & Sons.

Worapanwisit, T., Prabpai, S., & Rosenberg, E. (2018). Correlates of falls among community-dwelling elderly in Thailand. *Journal of aging research, 2018*.

Younas, A. (2017). A foundational analysis of dorothea orem's self-care theory and evaluation of its significance for nursing practice and research. *Creative nursing, 23*(1), 13-23.

ขวัญ, เ. ค., เงิน, อ. ค., ลัย, อ. ว., & ขัดตา, น. พ. (2018). Home-based Fall Prevention Guideline in Thai Contexts for Elderly People. *Nursing Journal of The Ministry of Public Health, 28*(3), 10-22.