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Front Pages

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Editorial and Reviewers' Board

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The current issue is the third of the eleventh volume of the *Athens Journal of Health and Medical Sciences* (AJHMS), published by the **Health & Medical Sciences Division of ATINER.**

Gregory T. Papanikos
President
ATINER

Athens Institute for Education and Research

A World Association of Academics and Researchers

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Academic Members Responsible for the Conference

- **Dr. Paul Contoyannis**, Head, Health Economics & Management Unit, ATINER & Associate Professor, McMaster University, Canada.
- **Dr. Vickie Hughes**, Director, Health & Medical Sciences Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.

Important Dates

- Abstract Submission: **19 November 2024**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **26 May 2025**

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Important Dates

- Abstract Submission: **1 October 2024**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **7 April 2025**

Academic Member Responsible for the Conference

- **Dr. Vickie Hughes**, Director, Health & Medical Sciences Research Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.
- **Dr. Carol Anne Chamley**, Head, Nursing Research Unit & Associate Professor, School of Health and Social Care, London South Bank University UK.
- **Dr. Andriana Margariti**, Head, Medicine Research Unit, ATINER & Lecturer, Centre for Experimental Medicine, Queen's University Belfast, U.K.

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Assessment of 4th Grade School Students' Rabies Protection Motivation and Preventive Behavior in Chonburi Province, Thailand

By Mayurin Laorujisawat[*], Araya Prasertchai[±], Saruda Jiratkulthana[°], Kowit Suwannahong[•] & Vuttajug Punsombut[♦]

Rabies is one of Thailand's most deadly endemic diseases. Young people under 15 are at risk. The Protection Motivation Theory (PMT) has amassed considerable acceptance. This study compared Rabies Protection Motivation (RPM) and Rabies Preventive Behavior (RPB) in fourth-graders in Chonburi province who attend the Office of the Basic Education Commission (OBEC) (290 students) and the Office of the Private Education Commission (OPEC) (268 students) schools. The result of the study indicated that students who enrolled in school under the OPEC demonstrated significantly higher levels of RPM (39.22 SD=4.487, P < 0.001) and RPB (16.60 SD=3.889, P < 0.05) compared to students under OBEC. On the other hand, the students in OBEC schools presented lower scores in RPM (37.35 SD=4.923, P < 0.001) and RPB (15.81 SD=3.398, P < 0.05). When examining the components of RPM, it was discovered that students in OPEC schools presented remarkably higher levels of Rabies Perceived Vulnerability (RPV) (9.94 SD=1.560, P < 0.001) and Rabies Self Efficacy (RSE) (10.85 SD=1.426, P < 0.001) compared to students under OBEC (RPV; = 9.38 SD=1.577, P < 0.001, and RSE; = 9.98 SD=1.850, P < 0.001). OBEC and OPEC students need instructional programs to improve Rabies Perceived Severity (RPS). These programs will educate students about rabies and promote students' rabies defenses.

Keywords: *Rabies, Protection Motivation, Preventive Behavior, 4th grade school Students, Thailand*

Introduction

Due to its high annual death rate of over 59,000 and lack of a reliable treatment, rabies is a zoonotic disease that is widely recognized as a significant global public health concern (Centers for Disease Control and Prevention 2020, WHO 2005). Notably, the research identifies children under the age of 15 as the most vulnerable demographic (Deray et al. 2018, Meslin & Briggs 2013, WHO 2018, Wilde et al. 2017). In Thailand, Rabies is a prevalent endemic disease (WHO 2023). According to the statistics on Rabies-related deaths in Thailand

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from 2011 to 2022, Chonburi province in Thailand has recorded the highest mortality rate in relation to Rabies-related deaths (Epidemiology 2022). Research conducted in Thailand revealed that the majority of deaths were among those under the age of 15 (Bureau of Epidemiology 2016, Kasempimolporn et al. 2008), particularly in rural regions (Goel et al. 2007). The primary determinant of death is the absence of consciousness about the dangers of rabies and the essential precautions to be followed after being bitten by an animal (Bureau of General Communicable Diseases 2017). Furthermore, Savadogo and Boushab (2015) further elucidation that individuals under the age of 15 exhibit an inadequate understanding of the risks involved in contracting Rabies, resulting in less-than-ideal management of the disease. Additionally, some children fail to show up for additional wound care following initial treatment. In contrast, older individuals recognize the risks associated with rabies and actively seek medical treatment (Deressa et al. 2010). An analysis of many research (Amparo et al. 2019, Dzikwi et al. 2012 Lungten et al. 2021, Sancheti & Mangulikar 2016) revealed that a small number of children knew that rabies is a potentially lethal disease, and it could identify their susceptibility to it. Hence, awareness and education are essential. Furthermore, the cognitive process is likely to have a significant impact on the decision-making process, resulting in alterations in behavior (Xiao et al. 2014). These characteristics align with the protection motivation theory (PMT) factors.

As a framework for the prediction and intervention of health-related behavior, The Protection Motivation Theory (PMT) has been extensively embraced since its development (Rogers 1975). PMT has accumulated (garnered) significant acceptance as a conceptual framework for predicting and manipulating health-related behaviors. The construction of PMT includes four key components: Perceived Severity (PS), Perceived Vulnerability (PV), Response Efficacy (RE), and Self Efficacy (SE). These components are crucial in avoiding possible damage and significantly promoting advantageous behavioral change. These parameters are influenced by the utilization of fear-inducing media as opposed to the typical utilization of stimulation, environmental organization, persuasion, observational learning, personality, and experience (Clubb & Hinkle 2015). As an investigation and comprehension of health-related and preventive/protective behaviors, researchers have utilized PMT (Ezati Rad et al. 2021, Puttapa 2016, Roozbahani et al. 2020). Further studies on children have applied PMT to examine a range of risk behaviors, such as drug or nicotine use (Macdonell et al. 2013, Sabzmakan et al. 2018, Sadeghi et al. 2019), perceptions of sexual health programs (Chambers et al. 2018, Gong et al. 2009, Pham et al. 2012), and cybersecurity behavior (Florence & Jhee Hee 2021). In addition, it appears that children should be educated about self-care behaviors from 9 to 10 years old (WHO 1997) because of the stage of development. These advancements collectively contribute to the enhancement of healthcare awareness through the application of information and analytical ability (Surapong Sotanasathien 1990). To resolve a gap in the literature, the current investigation utilized the PMT as a predictive instrument to forecast Rabies Preventive Behavior (RPB) among fourth-grade students in Chonburi province attending schools administered by the Office of the Basic Education Commission (OBEC) (268 students) and the Office of the Private Education Commission

(OPEC) (290 students). Upon concluding the Rabies Protection Motivation (RPM) analysis, the data will be converted to execute targeted Rabies preventive programs for elementary school students in the future.

Materials and Methods

Samples and Populations

This study was conducted as a cross-sectional survey from July 2022 to February 2023. The population of fourth-grade students in Chonburi province was 11,199, of which 5,929 were boys and 5,270 girls (Office of the Basic Education Commission Ministry of Education, 2022). The study randomized 558 students, both boys and girls, who were enrolled in fourth-grade students under the Office of the Basic Education Commission (OBEC) and schools under the Office of the Private Education Commission (OPEC) in Chonburi province. The sample size was estimated using G*Power 3.1 software developed by Faul et al. (2007). Using a multistage selection procedure, the sample was randomly selected from OBEC and OPEC in six districts. The study commenced by implementing stratified sampling, which divided the sample based on geographical divides. The population was split into two distinct groups: the first group was made up of the Chonburi province areas (Bang Lamung, Si Racha, and Ban Bueng) that had dogs with rabies cases reported in 2021, and the second group was made up of the areas without dogs with rabies cases reported. Three sub-districts, Mueang Chonburi, Phanat Nikhom, and Bo Thong, were selected from the second group using a straightforward random selection technique. The final approach employed was cluster sampling, wherein two schools (one from OBEC and another from OPEC) were randomly selected from each of the chosen sub-districts. A total of 558 samples were collected.

Research Instruments

One of the instruments used in this investigation was a questionnaire produced by the researcher. The questionnaire consists of three sections: The study aims to examine the socio-demographic characteristics of the students, which include factors such as gender, district, school affiliation, academic achievement, father's employment, mother's occupation, pet ownership, and history of animal attacks. The assessment of Rabies Protection Motivation (RPM) involves using a Likert scale to quantify degrees of agreement, uncertainty, and disagreement. The four crucial elements consist of Rabies Perceived Severity (RPS), Rabies Perceived Vulnerability (RPV), Rabies Response Efficacy (RRE), and Rabies Self Efficacy (RSE). There are a total of sixteen questions, and each question carries a maximum of forty-eight points. The Rabies Preventive Behaviour (RPB) is evaluated using a Likert scale that gauges the frequency of engagement, ranging from regular, frequent, occasional, to never. There are a total of six questions, and each question has a maximum score of twenty-four points. The final version of the

questionnaire was assessed for content validity by calculating the Item-Objective Congruence (IOC), which was greater than 0.8, indicating satisfactory content validity. The reliability was evaluated by calculating the Cronbach's alpha coefficient. The Cronbach's Alpha reliability study yielded a value of 0.712 for the Rabies PMT and 0.740 for the RPB. Their quality was considered suitable, as it exceeded the criterion of 0.7, as established by Polit and Beck (2017).

Data Analysis

The data obtained from the surveys underwent a process of cleaning and verification for completeness before being inputted into EpiData Analysis version 2.1. Descriptive statistics were computed for three categories: 1) socio-demographic data, 2) the RPM, and 3) RPB. The RPM constructions were classified based on Bloom's threshold (<60% as poor, 60 - 80% as fair, and >80% as good) (Bloom BS, 1968) independent t tests will be conducted to compare the average scores of each variable between students studying in schools under the OBEC and OPEC.

Ethical Considerations

The study was conducted under the regulations of the Human Research Ethics Committee of the Department of Health Sciences, Sukhothai Thammathirat Open University in Thailand, with approval number 0602.20/972. The confidentiality of all participants' information was ensured.

Results

The Socio-Demographic Character of the Students

Table 1 shows that in this study, 52% of the participating students are enrolled in schools under the OBEC, while 48% study in schools under the OPEC. These schools are situated near all six districts, namely Mueang Chonburi (17%), Phanat Nikhom (17.4%), Ban Bueng (14.9%), Sri Racha (18.1%), Bo Thong (15.2%), and Bang Lamung (17.4%). Both schools affiliated with OBEC and OPEC frequently demonstrate comparable demographic features. The survey revealed that the predominant gender among the respondents is girls, accounting for 60.2% of the total. Furthermore, a significant proportion of respondents, 50.7%, demonstrated good academic achievement, while 29.4% achieved fair results. Additionally, it was observed that 62.4% of students possess pets, with dogs being the most prevalent choice, accounting for 26.3% of the total. Regarding pet-inflicted bites, scratches, or lick wounds, it was discovered that most students from both affiliations have mostly not experienced any injuries caused by pets in the past year (54.8%). The experiences of individuals who have encountered this phenomenon are as follows: being bitten (12.4%), being scratched (17.9%), and being both bitten and scratched (9.1%). The two associations exhibit distinct population features, including variations in parental employment. Employed

fathers and mothers comprise the majority of students attending OBEC schools (24 percent and 19.7 percent, respectively). In contrast, company employees comprise the majority of fathers and mothers attending OPEC schools (18.5 percent and 18.6 percent, respectively).

Table 1. *The Socio-Demographic Characteristics of 4th-grade Students Studying in Schools under the Office of the Basic Education Commission (OBEC) (n=290 People) and Schools under the Office of the Private Education Commission (OPEC) (n=268 people)*

Variable	Frequency (%)		
	OBEC (n=290)	OPEC (n=268)	Total (n=558)
Gender			
Boy	123 (22.1)	99 (17.7)	222 (39.8)
Girl	167 (29.9)	169 (30.3)	336 (60.2)
District			
Mueang Chonburi	50 (9.0)	45 (8.0)	95 (17.0)
Phanat Nikhom	51 (9.1)	46 (8.2)	97 (17.4)
Ban Bueng	36 (6.5)	47 (8.4)	83 (14.9)
Sri Racha	53 (9.5)	48 (8.6)	101 (18.1)
Bo Thong	51 (9.1)	34 (6.1)	85 (15.2)
Bang Lamung	49 (8.8)	48 (8.6)	97 (17.4)
Academic achievement			
Very Good	47 (8.4)	51 (9.2)	98 (17.6)
Good	129 (23.1)	154 (27.6)	283 (50.7)
fair	105 (18.8)	59 (10.6)	164 (29.4)
poor	9 (1.6)	4 (0.7)	13 (2.3)
Father's occupation			
Not working / house husband / Died	27 (4.8)	19 (3.4)	46 (8.2)
Company employee	72 (12.9)	103 (18.5)	175 (31.4)
Employee	134 (24.0)	35 (6.3)	169 (30.3)
Self-employed/ Merchant	43 (7.7)	67 (12.0)	110 (19.7)
Others	14 (2.5)	44 (7.9)	168 (10.4)
Mother's occupation			
Not working / housewife / Died	30 (5.4)	43 (7.7)	73 (13.1)
Company employee	77 (13.8)	104 (18.6)	181 (32.4)
Employee	110 (19.7)	21 (3.8)	131 (23.5)
Self-employed/ Merchant	57 (10.3)	72 (12.9)	129 (23.2)
Others	16 (2.8)	28 (5.0)	44 (7.8)
kinds of domesticated mammals			
Do not take care of any animals.	95 (17.0)	115 (20.6)	210 (37.6)
Only dog	84 (15.1)	63 (11.3)	147 (26.3)
Only cat	55 (17.2)	41 (17.2)	96 (17.2)
Other mammals besides cats and dogs	8 (1.4)	11 (2.0)	19 (3.4)
Dog and cat	37 (6.6)	30 (5.4)	67 (12.0)
Dogs and other mammals	6 (1.1)	4 (0.7)	10 (1.8)
Cat and other mammals	4 (0.7)	2 (0.4)	6 (1.1)
Dogs, cats, and other mammals	1 (0.2)	2 (0.4)	3 (0.5)
Experienced injury from domesticated mammals within the previous year.			
Not experienced any injuries	138 (24.7)	168 (30.1)	306 (54.8)
Last year, mammal bites	43 (7.7)	26 (4.7)	69 (12.4)
Past year mammal scratches	59 (10.6)	41 (7.3)	100 (17.9)
Past year mammal licks at a wound	7 (1.3)	4 (0.7)	11 (2.0)
Last year, mammal bites and scratches	28 (5.0)	23 (4.1)	51 (9.1)
Last year, a mammal bites and licked at a wound	2 (0.4)	0 (0.0)	2 (0.4)
Last year, a mammal scratched and licked at a wound	4 (0.7)	3 (0.5)	7 (1.3)
In past years, animal bites, scratches, or licks have occurred at a wound site.	9 (1.6)	3 (0.5)	12 (2.2)

Rabies Protection Motivation (RPM)

Upon analyzing the scores for RPM and RPB, which have a range of scores, maximum, minimum, mean, and standard deviation (SD) as shown in Table 2, it was discovered that students studying at OPEC schools had significantly higher RPM scores (mean = 39.22, SD = 4.487, P < 0.001) and RPB scores (mean = 16.60, SD = 3.889, P < 0.05) compared to students studying at OBEC schools (RPM scores; mean = 37.35, SD = 4.923, P < 0.001 and RPB scores; mean = 15.81, SD = 3.398, P < 0.05). When examining the components of RPM, it was discovered that students in OPEC schools presented remarkably higher levels of RPV (mean = 9.94 SD=1.560, P < 0.001) and RSE (mean = 10.85 SD=1.426, P < 0.001) compared to students in OBEC schools (RPV; mean = 9.38 SD=1.577, P < 0.001, and RSE; mean = 9.98 SD=1.850, P < 0.001). These differences were statistically significant at the 0.05 level. Furthermore, when the scores were categorized into three groups based on Bloom's criteria (Bloom 1968). As shown in Table 3, students in both OBEC and OPEC schools had scores within the same level for each variable. Specifically, RPM scores were at the good level (51.7% and 66.8%, respectively), and RPB scores were at the fair level (46.2% and 42.5%, respectively). When examining the components of RPM, only RPS scores were at a fair level, while RPV, RRE, and RSE scores were at a good level.

Table 2. *Examine the Average RPM, RPS, RPV, RRE, RSE, and RPB Scores of Students Enrolled in OPEC (n = 290) and OBEC (n=268) Schools, Using the Independent t-Test*

Variable	School affiliation	Score range	Minimum	Maximum	Mean	SD	t	p-value
RPM	OBEC	16-48	22	47	37.35	4.923	**-4.664***	**0.000**
	OPEC		28	48	**39.22**	**4.487**		
	Total		22	48	38.25	4.806		
RPS	OBEC	4-12	5	12	8.37	1.371	-0.205	0.838
	OPEC		4	12	**8.39**	**1.637**		
	Total		4	12	8.38	1.504		
RPV	OBEC	4-12	5	12	9.38	1.577	**-4.166***	**0.000**
	OPEC		5	12	**9.94**	**1.560**		
	Total		5	12	9.65	1.592		
RRE	OBEC	4-12	5	12	9.62	1.769	-2.845	0.006
	OPEC		5	12	**10.04**	**1.716**		
	Total		5	12	9.82	1.755		
RSE	OBEC	4-12	4	12	9.98	1.850	**-6.208***	**0.000**
	OPEC		6	12	**10.85**	**1.426**		
	Total		4	12	10.40	1.714		
RPB	OBEC	6-24	9	24	15.81	3.398	**-2.560***	**0.011**
	OPEC		8	24	**16.60**	**3.889**		
	Total		8	24	16.19	3.660		

Table 3. *RPM, RPS, RPV, RRE, RSE, and RPB Score Levels of Students Enrolled in OBEC (n = 268) and OPEC (n = 290) Schools*

Variable	School affiliation	Good	Fair	Poor
RPM	OBEC	**150 (51.7%)**	125 (43.1%)	15 (5.2%)
	OPEC	**179 (66.8%)**	87 (32.5%)	2 (7.0%)
RPS	OBEC	54 (18.6%)	**170 (58.6%)**	66 (22.8%)
	OPEC	60 (22.4%)	**132 (49.3%)**	76 (28.4%)
RPV	OBEC	**156 (53.8%)**	98 (33.8%)	36 (12.4%)
	OPEC	**165 (61.6%)**	89 (33.2%)	14 (5.2%)
RRE	OBEC	**168 (57.9%)**	88 (30.3%)	34 (11.7%)
	OPEC	**173 (64.6%)**	75 (28.0%)	20 (7.5%)
RSE	OBEC	**188 (64.8%)**	75 (25.9%)	27 (9.3%)
	OPEC	**223 (83.2%)**	40 (14.9%)	5 (1.9%)
RPB	OBEC	46 (15.9%)	**134 (46.2%)**	110 (37.9%)
	OPEC	69 (25.7%)	**114 (42.5%)**	85 (31.7%)

Discussion

This study forecasted Rabies Preventive Behavior (RPB) among fourth-grade students in Chonburi province attending schools administered by the Office of the Basic Education Commission (OBEC) and the Office of the Private Education Commission (OPEC). Our research shows that the children enrolled in OPEC schools had significantly higher RPM and RPB scores than those attending OBEC schools. This conclusion is consistent with similar results in other studies (Adeyemi 2014, Kumar & Choudhury 2021, Roy & Majumder 2020). Additionally, it was documented that the average GPA and academic outcomes of pupils in the private primary schools performed better than their counterparts in the public schools.

RPM consists of a combination of the four constructs: Rabies Perceived Severity (RPS), Rabies Perceived Vulnerability (RPV), Rabies Response Efficacy (RRE), and Rabies Self-Efficacy (RSE). It was found that students had good RPV, RRE, and RSE levels (OBEC; 53.8%, 57.9%, and 64.8% OPEC; 61.6%, 64.6%, and 83.2%, respectively). Only on the RPS construct at 58.6% and 49.3% (OBEC and OPEC) did students score at a "fair" level. This finding is consistent with the result reported by Sirinan Kumsri (2018) but inconsistent with previous studies (Lanthip Hearabut & Natthisa Booncharoen 2016, Puttapa 2016). Possible factors contributing to the moderate RPS level attainment among the majority of fourth-grade students could be the age-dependent nature of the RPS construct, as individuals, both children and adults, undergo distinct stages of cognitive development. The study participants achieved the lowest RPS scores on the RPM in OBEC schools (mean = 10.85, SD = 1.371) and OPEC schools (mean = 8.39, SD = 1.637). The majority of pupils were uncertain about the extent of the severity of rabies. However, the role of RPS in RPM constructs is significant as awareness of the repercussions and damages of rabies can enhance protective motivation among students (Sadeghi et al. 2019). Hence, it is crucial to prioritize the consideration of RPS while developing educational programs. This can be

achieved by integrating real-life stories of children who have encountered mammal attacks, as Okuhara et al. (2020) suggested.

In the RPM framework, the RSE construct had the highest scores in both OBEC schools (mean = 10.85, SD = 1.426, $P < 0.01$) and OPEC schools (mean = 9.98, SD = 1.850, $P < 0.01$). The investigation aligned with the results of prior investigations (Ezati Rad et al. 2021, Florence & Jhee Hee 2021, Laorujisawat et al. 2021, Macdonell et al. 2013, Sadeghi et al. 2019). It was disclosed that Self-Efficacy (SE) obtained the highest score among the RPM constructs. Furthermore, it supported the findings of Anam and Susanto (2018), which found that students attending private elementary schools scored higher on SE than students attending public schools. According to a study, possessing RSE indicators had a statistically significant relationship to RPM constructs (Laorujisawat et al. 2021), meaning a high degree of RSE is believed to contribute to promoting RPB. This is because individuals with higher RSE scores are more inclined to consistently take measures to minimize the risks associated with rabies, protect their well-being, and minimize the adverse consequences of improper RPB. Therefore, while designing educational interventions, it is vital to give priority to the RSE construct since it plays a critical role in mitigating dangers (Sadeghi et al. 2019).

Conclusion

The PMT, or Protection Motivation Theory, is a valuable framework for accurately forecasting behavior, particularly in relation to intention and motivation surrounding RPB (Laorujisawat et al. 2021). While the students in OPEC schools demonstrated higher levels of all four constructs of RPM (RPS, RPV, RRE, and RSE), particularly PRV and PSE, compared to the students in OBEC schools, it is necessary to enhance RPM in both OBEC and OPEC. This is because when the scores were classified into three groups according to Bloom's criteria, students in both OBEC and OPEC schools obtained scores within the same level. Furthermore, it is imperative to implement educational initiatives aimed at enhancing RPS among students in both OBEC and OPEC, as they have exhibited limited scores. These programs will heighten students' understanding of the gravity of rabies, hence fostering a proactive approach towards self-protection against Rabies. Additionally, educational institutions should incorporate activities that promote the growth of cognitive flexibility and encourage the adoption of positive problem-solving behaviors among students (Alhraiwil et al. 2019, Alkhatri & Shamssain 2023). In order to reduce the occurrence of rabies, it is crucial to promote and strengthen relevant behaviors about rabies prevention among students. This intervention is anticipated to improve students' capacity to protect themselves from rabies in the future.

Study Limitations

There are certain constraints in this study. Due to the fact that the subjects of this study were fourth-grade pupils, specific PMT components (i.e., Perceived Rewards, Perceived Response cost) were not examined. In future studies involving family members, it would be beneficial to include these constructions. The Perceived Rewards construct has an impact on Threat Appraisal, whereas the Perceived Response cost construct influences Coping Appraisal (Rogers & Prentice-Dunn 1997).

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An Exploratory Study of Licensed Nursing Home Administrators (Lnha) Levels of Organizational Commitment

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This study of the Levels of Organizational Commitment of Licensed Nursing Home Administrators (LNHA) analyzed participant survey responses to better understand the factors which reinforce or deter from organizational commitment in this population. An exploratory factor analysis was used to consider the title, age, levels of education, size of facility, change over in ownership, as well as other various organizational traits. The findings of this study identified the following seven factors (latent variables) as underling the survey responses: 1) Familial Nature of the Organization, 2) Individual Investment in the Organization, 3) Nature of the Facility, 4) Vision of the Organization, 5) Organizational Work Environment, 6) Educational Attainment of the Administration, and 7) Adherence to Company Procedures. The authors propose that these seven latent variables are important considerations in retaining Nursing Home Administrators and should be utilized to guide future research and practice.

Keywords: *nursing home administrator, organizational commitment, job satisfaction*

Introduction

The U. S. Bureau of Labor Statistics (BLS) has projected the need for License Nursing Home Administrators (LNHA) to grow exponential industries wide. Employment for LNHA is projected to increase by 32 percent between 2020 and 2030 (Career Builder 2024, Nursing Home Administrators career spotlight). These statistics suggest that credentialed Licensed Nursing Home Administrators may experience a demand for their talents and glean increase career opportunities for employment over the next decade (Bureau of Labor Statistics 2024). Data suggest that many individuals do not enter the field of nursing home administrators until later in their careers, consequently, high turnover is inticipated as administration age and retire out of the system over the next twenty years. This creates new job opportunities for younger professionals who have obtained the necessary experience and education.

Past studies have shown that 40% of facilities change administrators every year and 80% of those who leave; go in search of better opportunities (Singh & Schwab 2000). Average tenure rates of 32 months, were identified in earlier studies conducted during the mid-eighties (Castle et al. 2007). Sadly, later studies

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found turnover rates as high as 140 percent during a two-year period (Castle et al. 2007).

Additionally, other studies have found that LNHA feel as if they are only left with the opportunity to react to policy makers, rather than collaborate with city, state and federal policy makers (Gadbois et al. 2023). Not surprisingly, job burnout in LNHA is high (Wilson 2018). A study from 2018, highlighted that 46% of LNHA reported that they felt emotionally drained from their work. Those who remained in the field for as little as 1. 3 years were often able to find promotional opportunities within the industry (Singh & Schwab 2000). Sadly, other studies found voluntary departures from the industry to be as high as 81% in some cases (Singh & Schwab 2000).

Replenishment rates for LNHA has failed to be considered directly in most of the studies recently conducted. Yet the average age of a LNHA is 46 which suggest that replacement rates will be a major concern within the next 15 to 20 years. This exploratory study of the Levels of Organizational Commitment of LNHA considers the basic age and education level of LNHA as well as other factors which contribute to lower levels of Organizational Commitment within this population (Castle et al. 2007). The utilization of traditional educational pathways has been left out of many of the discussions with regard to the emerging generation of LNHA. University and Colleges with programs accredited by the Association of the Long-term Care Administrator Boards (NAB) although not the only pathway to licensure; has only been established in 15 universities or colleges throughout the United States as of the academic year of 2023-2024. This study's findings support the development of more university and college based educational programing to support and foster the anticipated need of future LNHA. Disappointingly, the education levels and experiences crucial to the success of most LNHA is also overlooked by most studies broaching this subject as educational levels were never a factor specific to the development of federal nor state licensing requirement.

The evolution of the licensing requirements by state and the federal government transpired over multiple years the earliest of which was 1965 when the social security act required nursing home administrators to be licensed by (Townsend 2020). Shortly thereafter, the Medicare and Medicaid required states to enforces licensing requirements; first provisionally by July of 1970 and then by examination in July of 1972 (Townsend 2020). The exam for licensure in it earliest evolution resembled a qualifying exam which considered the requisite knowledge required of a person tasked with the over-site of a nursing home. Management in general, as an area of study has reached a level of complexity that has resulted in the subdivision and development of specialization; has grown at an exponential rate since the sixties when this exam was originally established.

Simultaneously, healthcare expenses have increased exponentially, since the 1950s (Fuchs 2012). A growth spurt which was initiated at the introduction of Medicare and Medicaid in 1965; this growth is evidenced by the increase in health expenditure which accounted for 17% or our GDP in 2009 versus the 4.6% of GDP which healthcare expenditures represented in 1950 (Fuchs 2012).

Organizational Commitment

Organizational commitment refers to and individual relationship with her or his organization. Traditionally our understanding of organizational commitment is based on the commitment one has to the goals and values of the organization. Recently, scholars have begun to recognizes the failure of this linear, one-directional understanding of the relationship between employee and employer. Instead, we have begun to recognizes that organizational commitment is also nurtured by the organization's behavior toward the individual. Organizational commitment although often viewed as a one-directional, independent reaction of the employee towards her or his organization, when viewed holistically, is understood to truly speaks to the reciprocal relationship between the organization and the individual and the expressed interactions between the two (Alkhateri et al. 2018).

Although theories of organizational commitment vary, three prevailing aspects of organizational commitment which tend to endue consistently is that is affective, normative and continuous (Meyer & Allen 1984, 1997, Allen & Meyer 1990). Specific to all three of these aspects of the theory of organizational commitment is that it can be reduced to the relationship between the employee and employer. The progression of this relationship is based on the employees' willingness to accept the proposal terms of the work relationship. Additionally, the three aspects of organizational commitment which are reinforced by this relational perspective is that an emotional attachment exists often referred to as affective commitment. The obligatory nature of this this employer/employee relationship is also referred to as the normative commitment. Finally, the repercussions of leaving a job are the sometimes referred to as continuous commitment. Collectively these three notions of how employees determine whether they will leave or stay within an organization seem to be articulated in most iterations of organizational commitment theory.

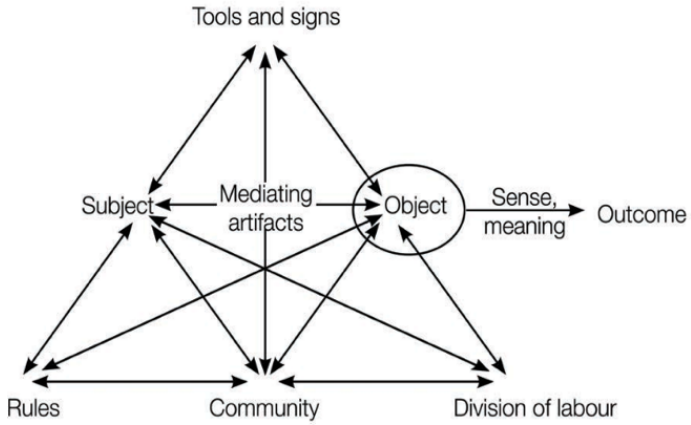
The Organizational commitment scale has consistently been a highly efficient predictor of employee retention rates (Ashman 2007). Alternatively, Lok and Crawford's studies (2003) found that high Levels of Organizational Commitment positively correlate to high levels of employee performance. Organizational commitment was also found to be a correlative predictor of workplace behaviors. This construct was linked with the level of employee contribution and employee withdrawal intentions. Age, position, and tenure were also positively related to organizational commitment. These findings further support the general belief that Organizational Commitment renders homogeneous findings when coupled with other qualitative tools (Pettaway 2010). Due to the highly complex nature of the construct of Organizational Commitment, researchers have often organized this construct into a "multiple-dimensional construct"; however, Organizational Commitment is most often used as the measure of attitudinal approaches associated with variables of interest (Lok & Crawford 2000).

Theoretical Model/Philosophical Framework

Wenger explained in his landmark text, *Situated learning: Legitimate peripheral participation* (Lave & Wenger 1991) "Learning viewed as situational activity has a central defining characteristic a process which we call legitimate peripheral participation." This definition hinges on the understanding that legitimate peripheral participation requires learners to not only express a level of mastery of knowledge and skills as they engage full in the sociocultural community practices. The internship or Administrator in Training (AIT) component of LNHA's licensing/training grows out of this notion that legitimate peripheral participation is not only necessary, but quired to receive licensure and thus express some level of mastery or at least areas where requisite skills sets can be employed, adequately assisted and further developed. This process is probably best organized and expressed through the frame work of Culturally Historical Activity Theory (C.H.A.T.)

C.H.A.T. builds on the notion specific to activity theory. Activity theory is firmly rooted in ideas articulated by Kant and Hegel whose work placed emphasis on the active and constructive role of human development as viewed through the organizing lens of historical relevance (Jonassen & Rohrer-Murphy 1999). Activity theory as a framework for designing constructivist learning environments. More recent iterations of activity theory are associated with Vygotsky, Leont'ev and Luria. This research has utilized activity theory as a philosophical framework as it lacks the features present in traditional theoretical methodologies. This framework has been utilized as it not only supports the epistemological ethos of the paper, but also reinforces the notion specific to this study's findings.

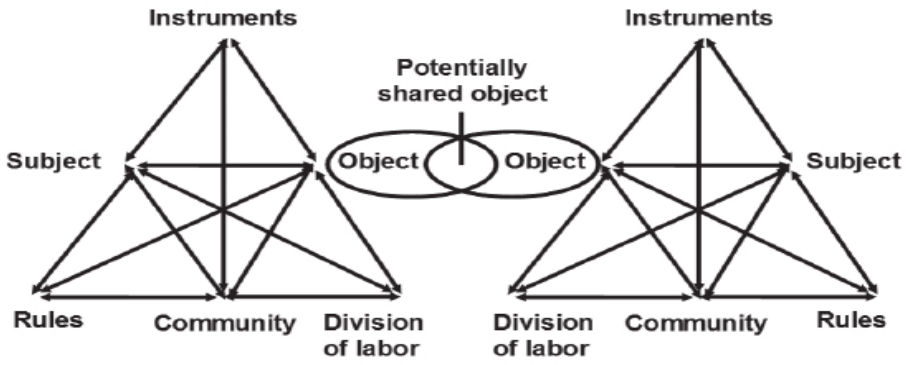
Diagram 1.



The organization setting of a nursing home lends itself to the activity theory model easily. Tools located within the nursing home setting, could be documents such a could be PPD (Patientcare Per Day tracking documentations) and databases to the actual beds and briefs which are needed to provide care to the residents. Division of labor in most nursing homes is located within a traditional framework with the administrator at the top of the diagram and everyone else falling

somewhere within the three or four levels below that. The community is constituted from the individuals inside as well as outside of the nursing home providing care for the community's residents. Rules are specifically defined through state and federal guidelines, reinforced though the regular evaluation as conducted during site visits, annual surveys and complaint surveys from the state representatives. The residents, under normal circumstances would be identified as the subjects. The object might be finally be recognized as the care provide. Mediating factors in this example would be many such as health insurance, organizational guidance and guidelines, personal perveances of the resident as it relates to overall care just to name a few. These learning systems often speak to the direct experiences of those engaged in the activities/learning processes. Yet the learning is not truly isolated to the learning system acknowledge in this model, instead these systems coordinate the experiences of multiple individuals and posit the possible places where interactions may occur which contribute to the separate realities and learning experienced by individuals not by designs—but through random, uncoordinated varied interactions.

Diagram 2.



The uncoordinated interaction of various learning systems is often considered in an organized manner. However, this model needs to be though of as a madding tornado of activities; excerpting pressures, work related and personal, at various speeds and with amplitude, under the pressure of deadlines, mandated at every level. This more accurately constitutes the nursing home administrative setting. It is riddled with intensity and complexities. Activity theory posits that the object resulting from the learning system is a place potentially shared objects and learning can occur. Unfortunately, the nature of that shared object can be unsupportive to the development of a sociocultural environment which supports the organizational goals, objectives, vision and mission.

Culturally historical activity theory (C.H.A.T) requires us to go even further and consider the time and cultural environment which the activity was located within (Nussbaumer 2012). Systems theory might have been a first choice for the methodological portion of this study, however, due to the complex nature of nursing homes environment as well as the seemingly random, plethora of activities taking place during any giving time C.H.A.T. seemed more appropriate.

Additionally, since we are utilizing a survey to gather data for this study systems theory would have been perfectly aligned with this study's deign. The findings expressed within this study, however, speak to a lived as well as learned experiences of LNHA. The findings are about what these administrators have learned about their organizations. How they feel their contributions are valued and/ or devalued; how their input if recognized and acknowledge or disregarded.

Research Questions

Two research questions guided this study and are provided below. Question 1 is purely demographic while Question 2 required the utilization of a Null and Alternate Hypothesis.

Research Question 1

What is the extent of response to questions one through twenty-six as provided on the Levels of Organizational Commitment survey instrument assessing the Level of Job Commitment for nursing home administrators?

Research Question 2

Do relationships exist between or among the responses on the Levels of Organizational Commitment survey instrument assessing the Level of Job Commitment for nursing home administrators?

> Research Question 2 was assessed using a null and alternate hypothesis as follows.
> ***Null Hypothesis***
> No relationships exist between or among the responses on the Levels of Organizational Commitment survey instrument assessing the Level of Job Commitment for nursing home administrators.
> ***Alternate Hypothesis***
> Relationships exist between or among the responses on the Levels of Organizational Commitment survey instrument assessing the Level of Job Commitment for nursing home administrators.

Research Deign

Data collection was derived from a self-administered on-line questionnaire. The participants were given copies of QR codes and asked to complete the questionaries at their leisure. The researcher distributed over one hundred questionnaires at a regional leadership conference at Myrtle Beach. The final sample size for this initial exploratory study was 35 in total. This twenty-six-item questionnaire was developed for this study by a team of Licensed Nursing Home Administrators and Researchers. The questionnaire considers three different components which include: the respondents' overall perceptions of the organization

they currently work for, their feelings towards the organization and their perceptions of the Level of Racial Prejudice within the organization.

Analysis of Research Question 1

The findings for Research Question 1 are provided in Table 1. These findings provide the descriptive demographics for each of the questions on the survey instrument.

Table 1. *Descriptive Demographics for the Survey Questions 1 through 26*

Question 1: Respondent Title	**Frequency**	**Percent**
Licensed Nursing Home Administrator (LNHA)	18	51.4
Nursing Home Administrator	15	42.9
Executive Director	1	2.9
Other	1	2.9
TOTAL	**35**	**100.0**

Question 2: Age Category	**Frequency**	**Percent**
Less than 20	0	0.0
20-29	6	17.1
30-39	3	8.6
40-49	11	31.4
50-59	12	34.3
60 and Over	3	8.6
TOTAL	**35**	**100.0**

Question 3: Highest Level of Education	**Frequency**	**Percent**
High School	0	0.0
Some College, No Degree	0	0.0
Associate's Degree	1	2.9
Bachelor's Degree	19	54.3
Master's Degree	14	40.0
Professional Degree	0	0.0
Doctorate	1	2.9
TOTAL	**35**	**100.0**

Question 4: Size of the Facility	**Frequency**	**Percent**
Less than 50 Beds	4	11.4
50-99 Beds	16	45.7
100-149 Beds	10	28.6
150 Beds or More	5	14.3
TOTAL	**35**	**100.0**

Question 5: Age of the Facility	**Frequency**	**Percent**
Less than 5 Years Old	1	2.9
5-14 Years Old	7	20.0
15-24 Years Old	5	14.3
25 or More Years Old	22	62.9
TOTAL	**35**	**100.0**

Question 6: Has Nursing Home Ever Changed Owners?	**Frequency**	**Percent**
Yes	1	2.9
No	9	25.7
Uncertain	25	71.4
TOTAL	**35**	**100.0**

Analysis of Questions 7 through 26	**Mean**	**SD**	**N**
7. My organization is a very dynamic and entrepreneurial place.	4.34	.725	35
8. My organization is a very formalized and structured place.	4.37	.690	35
9. My organization is like extended family. People seem to share a lot of themselves.	4.14	.912	35
10. My organization is very production oriented and focuses primarily on getting the job done with little emphasis on personal involvement.	3.00	1.372	35
11. My organization emphasizes human resources and places high importance on cohesion and morale.	4.54	.611	35
12. My organization emphasizes company growth and the acquisition of new resources.	4.20	.719	35
13. My organization emphasizes the accomplishment of measurable goals.	4.51	.507	35
14. Establish company procedures generally govern what people do.	4.17	.707	35
15. Employees are willing to stick their necks out and take risks to move the organization forward.	3.71	.987	35
16. I am willing to put in a great deal of effort beyond that normally expected to help this organization be successful.	4.49	.612	35
17. I talk up this organization to my friends as a great organization for which to work.	4.60	.497	35
18. I feel a high degree of loyalty to this organization.	4.23	.731	35
19. I find that my values and the organization's values are similar.	4.34	.725	35
20. This organization really inspires the very best in me in the way of job performance.	4.54	.611	35
21. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.	4.51	.658	35
22. I really care about the fate of this organization.	4.69	.530	35
23. It is unlikely that I will actively look for a different organization to work for in the next year.	4.46	.919	35
24. My organization is primarily free from evidenced racial prejudice.	4.37	.910	35
25. All personnel are treated equally.	4.31	.900	35
26. Promotions and advancement are based wholly on ability rather than ethnicity.	4.49	.887	35

As indicated on question 1, almost all of the respondents listed themselves as either licensed nursing home administrators or nursing home administrators. The prevalent age categories were between 40 and 59 years of age and holding either a baccalaureate or graduate degree. The vast majority of the facilities operated from 50 to 149 beds and were 25 years old or older. The highest responses questions 11, 17, 20, and 22 dealing with the organization's high emphasis on cooperation and morale, the positive work environment, the organization as an inspirational place of employment, and the employees concern about the success of the institution, respectively. The lowest scores were found on questions 10 and 16 which focused on the organization being production focused and providing an environment in which employees are willing to stick their necks out to move the organization forward.

Analysis of Research Question 2

An exploratory factor analysis was utilized to evaluate the null and alternate hypotheses required to answer research Question 2. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to establish the sufficiency of the data set for exploratory factor analysis. The KMO returned a score of 0.534 and the Bartlett's test had a significance of less than 0.001. Both scores fell within acceptable ranges indicating that the Null Hypothesis should be rejected in favor of the Alternate Hypothesis. Relationships do exist between or among the responses on the Level of Organizational Commitment survey. Initial Eigenvalues provided seven factors with values above 1.0 (Table 2).

Table 2. *Initial Eigenvalues*

Component	Initial Eigenvalues Total	Component Variance Explained	Component Variance Total
1	10.102	38.855	38.855
2	2.346	9.025	47.879
3	2.019	7.765	55.645
4	1.670	6.423	62.068
5	1.556	5.985	68.053
6	1.185	4.558	72.611
7	1.082	4.161	76.772

These seven factors (latent variables) explain a total of 76.772% of the variance in the data set explained a large portion of the sample variance. All of this strongly implies that the factors are very important in explaining the interaction within the data set. Subsequently, the factor loadings for these seven factors were obtained using a Varimax rotation. The rotation converged in 11 iterations. The factor loadings by factor follow in Table 3. Values with absolute values greater than or equal to 0.400 were deemed significant.

Table 3. *Rotated Component Factor Loadings Matrix*

Question	Component						
1. Title	-.197	.095	**-.640**	**.544**	.028	-.173	.135
2. Age Grouping	-.379	.382	.381	-.048	-.358	-.260	.382
3. Highest Level of Education Completed	-.340	-.132	-.129	-.091	-.058	**.750**	.062
4. Size of Facility	-.232	.160	**.674**	.096	.043	-.138	-.083
5. Age of Facility	.305	.037	.181	**.687**	.064	-.261	.030
6. Facility Has Changed Owners	.020	-.179	**.752**	.154	.067	-.018	.042
7. My organization is a very dynamic and entrepreneurial place.	.291	**.811**	.067	-.101	.130	-.116	-.053
8. My organization is a very formalized and structured place.	.201	.337	.029	-.055	.229	**.691**	.116
9. My organization is like extended family. People seem to share a lot of themselves.	**.487**	**.645**	.057	.121	-.080	.228	.179
10. My organization is very production oriented and focuses primarily on getting the job done with little emphasis on personal involvement.	.026	-.031	.148	.093	**.868**	.113	.234
11. My organization emphasizes human resources and places high importance on cohesion and morale.	**.734**	.144	.067	-.203	.043	-.140	.055
12. My organization emphasizes company growth and the acquisition of new resources.	.206	.275	-.068	**-.467**	**.700**	-.047	.022
13. My organization emphasizes the accomplishment of measurable goals.	.278	.110	-.060	**-.718**	.188	-.126	.345
14. Establish company procedures generally govern what people do.	.177	-.034	-.093	-.127	.288	.196	**.856**
15. Employees are willing to stick their necks out and take risks to move the organization forward.	**.424**	**.621**	.029	-.086	-.199	.044	.027
16. I am willing to put in a great deal of effort beyond that normally expected to help this organization be successful.	**.782**	.281	-.182	.006	.026	-.048	.259
17. I talk up this organization to my friends as a great organization for which to work.	**.430**	**.624**	-.381	.148	.152	.133	-.138
18. I feel a high degree of loyalty to this organization.	**.595**	**.606**	-.245	-.030	.274	.047	.014
19. I find that my values and the organization's values are similar.	**.574**	**.567**	-.148	-.085	.112	.034	.062
20. This organization really inspires the very best in me in the way of job performance.	**.827**	.149	-.145	-.193	.164	-.123	-.003
21. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.	**.855**	.252	-.296	-.030	.021	-.018	.092
22. I really care about the fate of this organization.	**.865**	.227	-.056	-.064	.018	.152	-.074
23. It is unlikely that I will actively look for a different organization to work for in the next year.	**.879**	.154	.040	-.004	-.059	-.170	.126
24. My organization is primarily free from evidenced racial prejudice.	**.672**	.164	.225	.251	.151	.131	.092
25. All personnel are treated equally.	**.739**	**.466**	-.007	.290	.115	.076	-.002
26. Promotions and advancement are based wholly on ability rather than ethnicity.	**.813**	.354	.027	.107	.172	.007	-.195

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 11 iterations.

Questions 9, 11, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26 define the first factor and explain 38.855% of the variance in the data set. Factor 1 may be described as the Familial Nature of the Organization. Questions 7, 9, 15, 17, 18, 19, and 25 explain 9.025% of the variance in the data set. Factor 2 may be described as the Individual Investment in the Organization. Factor 3 is defined by questions 1, 4, and 6 and explains 7.765% of the variance in the data set. Factor 3 can be described as the Nature of the Facility. Factor 4 is defined by questions 1, 5, 12, and 13. Factor 4 explains 6.423% of the variance in the data set and may be described as the Vision of the Organization. Factor 5 is defined by questions 10 and 12 and explains 5.985% of the variance in the data set. Factor 5 may be described as the Organizational Work Environment. Factor 6 is defined by question 3 and explains 4.558% of the variance in the data set. Factor 6 may be described as Educational Attainment of the Administration. Question 14 defines Factor 7 and explains 4.161% of the variance in the data set. Factor 7 may be described as Adherence to Company Procedures. In summary, the seven following factors were found to underly the survey responses: 1) Familial Nature of the Organization, 2) Individual Investment in the Organization, 3) Nature of the Facility, 4) Vision of the Organization, 5) Organizational Work Environment, 6) Educational Attainment of the Administration, and 7) Adherence to Company Procedures.

Conclusions and Recommendations for Future Research

The seven identified factors (latent variables) guiding the responses to the Levels of Organizational Commitment survey provide a road map for the acquisition and retention of qualified Licensed Nursing Home Administrators. Several of these latent variables have been overlooked by most of the identified studies broaching examining this topic. Additionally, licensing requirements of state and federal governmental agencies have evolved over multiple years, the earliest of which was 1965 when the social security act required nursing home administrators to be licensed by state. Shortly thereafter the Medicare and Medicaid required states to enforces licensing requirements; first provisionally by July of 1970 and then by examination in July of 1972. Employment for LNHA is projected to increase by 32 percent between 2020 and 2030, which means that these professionals will have plenty of career opportunities to find work over the next decade. Since, many people do not become nursing home administrators until later in their careers, consequently, the turnover is higher than in other positions as administrators age and retire. This creates new job opportunities for younger professionals who have obtained the necessary experience and education.

The Nursing Home market is ripe for expansion and positioned as a safe harbor profession safe from automation and most other forms of disruption. As the baby boomer generation ages, more and more older adults require beds in nursing homes, employees in all areas will be sought after. As of 2023, there are about **1.4 million residents** in U.S. nursing homes and it is anticipated that by 2050, up to **30 million people** in the Americas will require long-term care services. Just as

societies change over time, the specialization skill sets required of qualified nursing home administrative staff has changed. These seven factors call for further research and expanded examination of their importance to success in the field. They should be utilized to guide future research and practice as the U. S. Bureau of Labor Statistics (BLS) has projected the need for License Nursing Home Administrators (LNHA) to grow exponential across all industries and occupations.

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Gender Differentials of Non-communicable Diseases: A Case Study of Sri Lanka with Special Reference to Cardiovascular Diseases, Diabetes and Cancer

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Sri Lanka presents higher life expectancy (LE) of 76 years among its citizens which also marks a substantial male-female gap. Considering the country's deaths, deaths due to non-communicable diseases are on the rise also indicating differences among males and females. The main objective of this study is to explore the gender differentials of non-communicable diseases in Sri Lanka. The study uses secondary data collected from 2010-2015 by the Registrar General's Department and the Department of Census and Statistics (2015). Arriaga's decomposition techniques of life expectancy and the calculation of cause-specific death rates have been utilised in the main analysis. Decomposition of LE indicates that major contribution is through the indirect effect, which is 3.5 years considering the LE change during 2011-2013. Results reveal that males have a higher number of deaths due to NCDs compared to women. Considering the main three diseases of cancer, cardiovascular and diabetes, prevalence and mortality is relatively higher among males than females in most districts. It is important to identify the gender differentials in the mortality of the most common NCDs in order to support policy planning related to the management of the health and wellbeing of the population.

Keywords: *gender differentials, non-communicable diseases, life expectancy*

Introduction

To explore the gender differentials of non-communicable diseases in Sri Lanka, at first it is vital to understand the current situation through research background and then the objectives of the study and the structure of this paper. These are further explained in this introduction. This section covers definitions of selected Non-communicable diseases (NCDs), prevalence and the severity globally, Southeast Asia, and in Sri Lanka.

Concepts and Definitions of NCDs

An understanding is provided on the NCDs to be discussed in the study through this section and the information provided on each NCD is based on the definitions provided by the world health organization. Non-communicable

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diseases, also known as chronic diseases, are of long duration and generally slow in progression. They are not passed from person to person. The 3 main types of non-communicable diseases are cardiovascular diseases (such as heart attacks and stroke), cancers, and diabetes (Table 1).

Table 1. *Main Types of Non-Communicable Diseases*

Cardiovascular diseases
"Cardiovascular disease is caused by disorders of the heart and blood vessels, and includes coronary heart disease (heart attacks), cerebrovascular disease (stroke), raised blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure."
Cancer
"Cancer is the uncontrolled growth and spread of cells. It can affect almost any part of the body. The growths often invade surrounding tissue and can metastasize to distant sites. In addition, a significant proportion of cancers can be cured, by surgery, radiotherapy, or chemotherapy, especially if they are detected early."
Diabetes
"Diabetes is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin, it produces. This leads to an increased concentration of glucose in the blood."

Source: World Health Organization 2015.

Global Prevalence of Non-communicable Diseases

Non-communicable diseases are the leading causes of morbidity and mortality around the world, revealing a huge public health issue. Between 1990 and 2015, NCDs claimed the lives of 41 million individuals worldwide, accounting for 71percent of all deaths. Sixteen million people die from NCDs before they reach the age of 70, with 82 percent of these "premature" fatalities occurring in low- and middle-income nations.

Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), and diabetes (1.5 million) (WHO 2021) (Table 2).

Table 2. *Number of Deaths Caused by Selected NCDs, 2020*

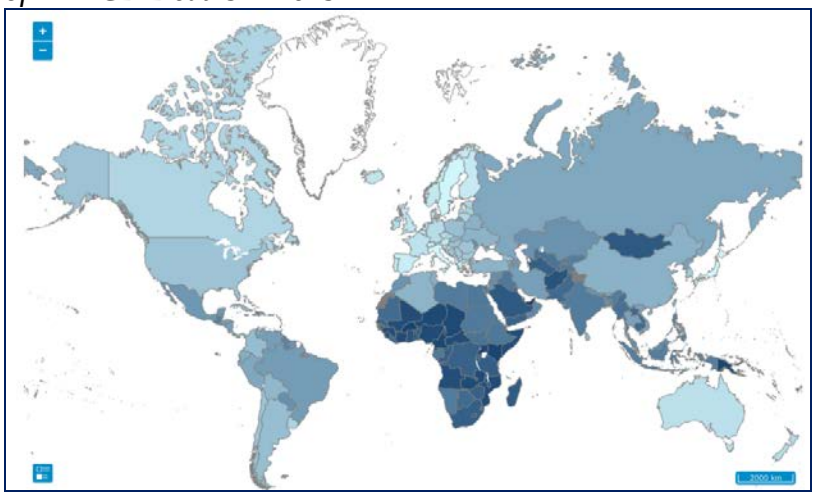
	World	**Lower- and middle-income countries**
Cardiovascular diseases	17.9 million	17.5 million
Cancers	9.3 million	8.2 million
Diabetes	1.5 million	1.5 million

Source: World Health Organization 2021.

Figure 1 describes the Premature deaths due to non-communicable diseases in the world. The highest premature deaths due to NCDs were recognized within the countries of the African region in 2019. The highest premature death prevalence was recorded within the countries of Somalia, Kenya, Uganda, Mozambique, Malawi, Zimbabwe, Angola, Madagascar, Congo, Chad, Cameroon, Niger, Nigeria, Burkina Faso, Mali, Cote DeVore, Guinea, and Sierra Leone from the

African region while countries such as UAE, Israel, Qatar, Saudi Arabia, Jordan, Afghanistan, Turkmenistan and Mongolia from Asia and Papua New Guinea from the region of Oceania.

Figure 1. *Premature Deaths due to Non-Communicable Diseases as a Proportion of All NCD Deaths in 2019*



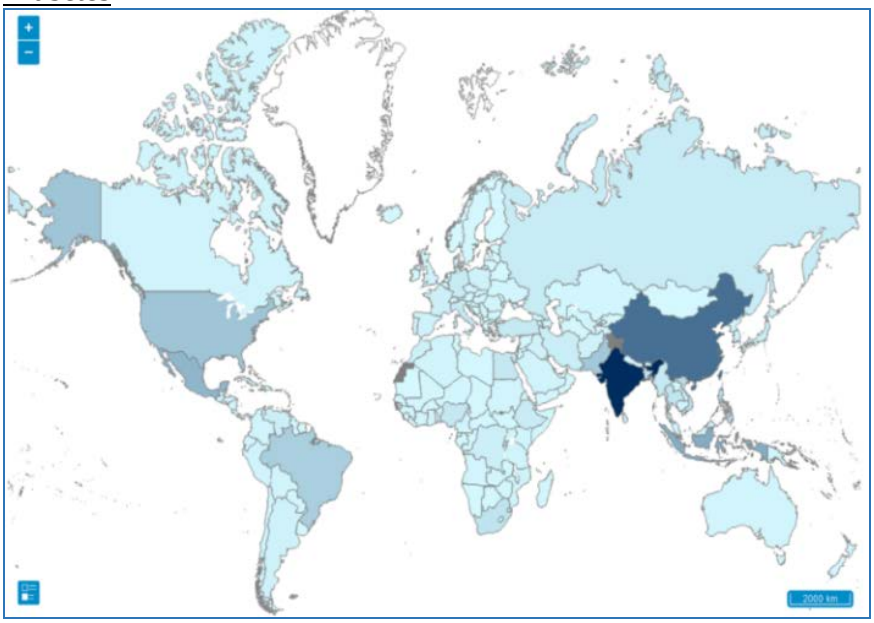
Source: World Health Organization 2021.

African region having the greatest number of least developed countries and having the least developed medical sectors could be taken as reasons for being recognized as the region to carry the highest number of premature deaths due to NCDs. Most of the countries in the European continent, North American Continent and Australia from the region of Oceania were identified to have a low prevalence in the premature deaths due to NCDs. Sri Lanka could be recognized as a country in the middle category to report premature deaths due to NCDs.

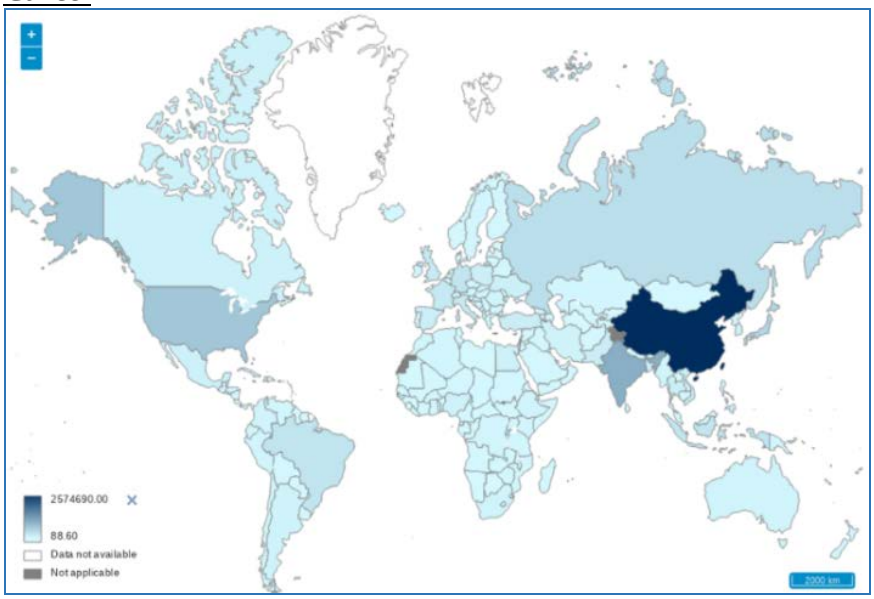
Figure 2. *Number of Deaths Attributed to Cardiovascular Diseases, Diabetes, and Cancer Diseases, by Country, in 2019*

Cardiovascular Diseases

Diabetes



Cancer



Source: World Health Organization 2021.

The highest number of deaths due to cardiovascular diseases were recorded with in the countries of China and Taiwan in 2019. After China and Taiwan, India and Bhutan could be identified to have the highest death prevalence. Countries such as Russia, USA, Alaska could be identified to be in the middle category.

The highest number of deaths due to diabetes were recorded with in the countries of India and Bhutan in 2019. Following, India and Bhutan, China and Taiwan could be identified to have the highest death prevalence due to diabetes. Countries such as USA, Alaska, Mexico, Brazil, and Indonesia could be identified

to be in the middle category while all most all the other countries being identified in the low death prevalence category due to diabetes.

The highest number of deaths due to Cancer diseases were recorded with in the countries of China and Taiwan in 2019. After China and Taiwan, India, Bhutan, USA, and Alaska could be identified to have a higher death prevalence due Cancer. Russia having slightly higher death prevalence than the rest of the countries is visible.

The risk factors for NCDs can be identified as demographic, socio-economic, behavioural, biological, and environmental. Tobacco, alcohol, physical inactivity, and a poor diet are all behavioural risk factors. Raised blood glucose, high blood pressure and overweight/obesity are all metabolic or biological risk factors. There also environmental risk factors. Tobacco usage is responsible for about 7.2 million fatalities worldwide each year, 4.1 million deaths are caused by excessive sodium/salt intake, 3.3 million deaths are caused by alcohol consumption, and 1.6 million deaths are caused by physical inactivity (WHO 2020). NCDs are caused by the interactions of a variety of factors, including environmental factors, physiological and behavioural factors, and they require lifelong treatment. NCDs are becoming more prevalent as a result of rapid urbanization and globalization, which has resulted in unhealthy diets, physical inactivity, and cigarette and alcohol consumption (Lancet 2016).

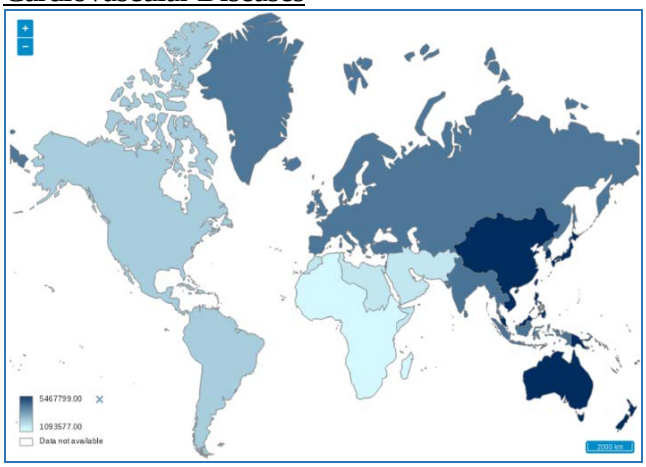
At this context, it is vital to conduct a study that pays special focus on the trends and patterns of NCDs and the factors affecting them. It is also important to reveal the health status of South Asia with regard NCDs to get a better understanding on the region.

Non-communicable Diseases in Southeast Asia

The growth of noncommunicable diseases as a public health problem is influenced by rapid changes in demography, as well as social and economic development. This is no longer limited to developed nations; it also applies to developing countries in Southeast Asia. Noncommunicable diseases are a major and growing burden on South-East Asia's health and development. “Globally, NCD deaths are projected to increase by 15 percent between 2010 and 2020 (to 44 million deaths) with an estimated 10.4 million deaths in South-East Asia.” (WHO 2021). The high rate of premature mortality from NCDs (deaths before the age of 70) in several low- and middle-income nations is particularly concerning. The majority of the world's population has experienced dramatic changes in disease profiles and health status, with a shift away from infectious diseases and nutritional deficiencies and toward a predominance of chronic lifestyle diseases.
Figure 3 describes number of deaths attributed to cardiovascular diseases, diabetes, and Cancers by region.

Figure 3. *Number of Deaths Attributed to Cardiovascular Diseases, Cancers and Diabtes, by Region in 2019*

Cardiovascular Diseases



Diabetes

Cancers

Source: World Health Organization 2021.

The highest number of deaths due cardiovascular diseases were identified with in the regions of East Asia, some parts of Southeast Asia and region of

Oceania. Regions of North Asia, South Asia, Southeast Asia, and parts of North America could be identified to be in the middle category to record deaths due to cardiovascular diseases. Other parts of North and south American regions and Western Asian records lower number of deaths while the lowest numbers were recognized from the region of Africa.

The highest number of deaths due diabetes were identified with in the regions of South Asia and some parts of Southeast Asia. East Asia, parts of Southeast Asia, most countries of North America, South America and Oceania regions could be identified to be in the middle category to record deaths due to diabetes. Part of North American region, Western Asian region, North Asian region, and African region records lower number of deaths due to diabetes during 2019.

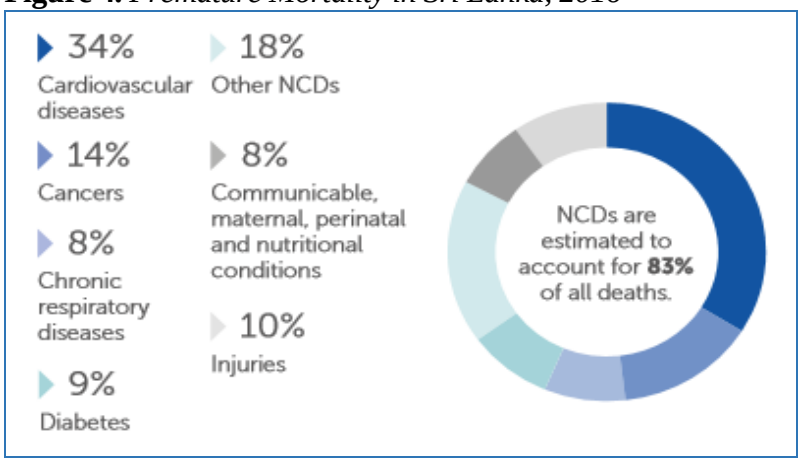
The highest number of deaths due Cancer diseases were identified with in the regions of East Asia, some parts of Southeast Asia and region of Oceania. Regions of North Asia, South Asia, Southeast Asia, and parts of North America could be identified to be in the middle category to record deaths due to cardiovascular diseases. Other parts of North and south American regions record lower number of deaths while the lowest numbers were recognized from the regions of Africa and Western Asia.

Non-Communicable diseases in Sri Lanka

Sri Lanka has made considerable strides from its initial focus on control of communicable disease, maternal and child health, and virtually eliminating vaccine-preventable diseases. Chronic non-communicable diseases (NCDs) have now become the primary causes of mortality and, morbidity in Sri Lanka, surpassing communicable diseases as the major health problem.

According to Figure 4, more than 80 percent of the premature deaths have occurred due to NCDs. Among them nearly one third of the deaths have occurred due heart diseases. Second and the third highest number of premature deaths have occurred due to the cancers and diabetes according to the World Health Organization.

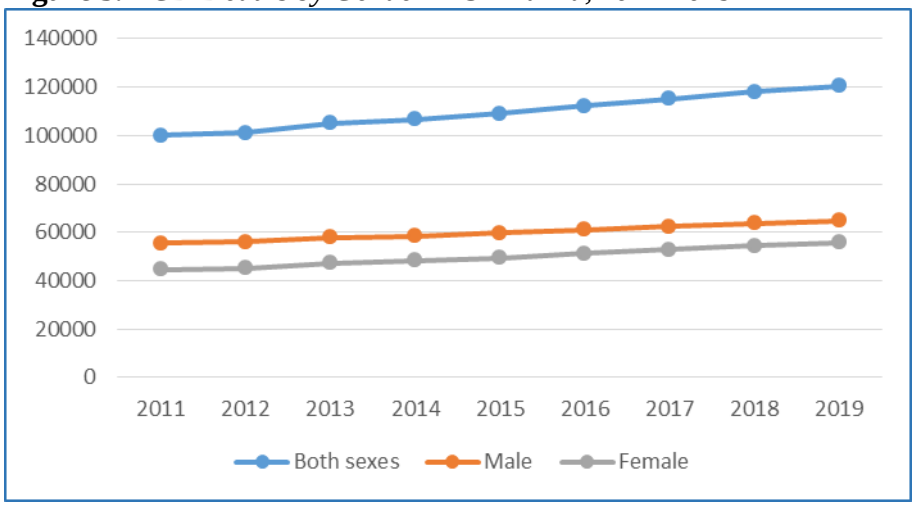
Figure 4. *Premature Mortality in Sri Lanka, 2016*



Source: World Health Organization 2018.

The deaths occurred due to non-communicable diseases in Sri Lanka could be identified from the figure given below. The deaths have gradually increased from year 2011 to 2019 and increasing trend could be identified. Number of male deaths has recorded higher compared to the female deaths throughout the years.

Figure 5. *NCD Deaths by Gender in Sri Lanka, 2011-2019*



Source: World Health Organization 2020.

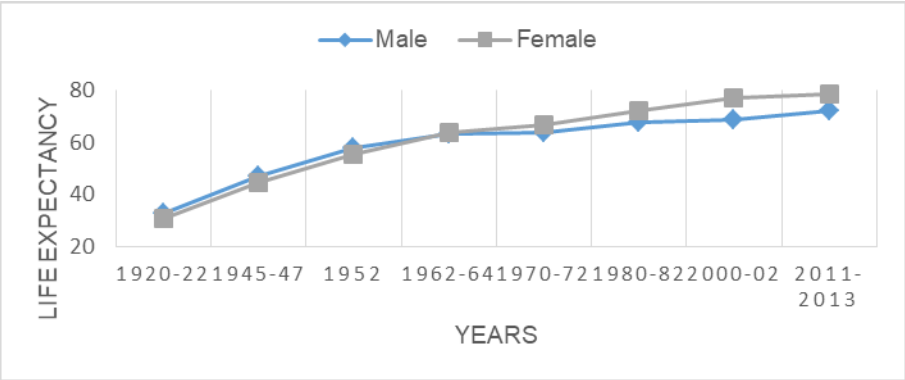
The following major chronic NCDs have a significant disease burden in Sri Lanka, cardiovascular diseases, diabetes, and cancers. Many of these disease burdens occur in the productive mid-life period. In Sri Lanka, NCDs are on the increase due to a rapid transition in lifestyle. Consumerism and lifestyle changes that are resulting from social and economic transition are strongly linked to higher NCD risk in Sri Lanka. The absence of well-established disease surveillance mechanism and positive health seeking behaviour prevents precise estimation of the size of NCD burdens, the direction of change is clear- the burden is rising. These NCDs are largely preventable and share common modifiable. Hence this study attempts to identify trends and patterns and influencing factors for non-communicable diseases in Sri Lanka.

Mortality due to NCDs and morbidity could have a significant impact on the social, economic and the health standards of a country. At present, Sri Lanka experiences the third stage of the epidemiologic transition and as a consequence of that there is a visible increase of the NCDs in the society and even though the life expectancy of the population has increased there is an emergence of elderly population who are suffering from long term NCDs. Mortality due to NCDs and morbidity could have a significant impact on the social, economic and the health standards of a country. According to the annual hospital data collected by the Ministry of health is concerned, it indicates a rapid growth and a distribution of NCDs with in the country (Ministry of Health 2016).

Sri Lanka has a life expectancy of 76 years for its citizens and is in the advanced stages of a demographic transition. Life expectancy trends have resulted in a substantial male – female gap in Sri Lanka, one of the largest in the world. Male-female gap at birth is identified as almost 7 years (Department of Census &

Statistics 2016). Even though the country has improved life expectancy of its population through the development in health indicators, non-communicable diseases (NCDs) could be observed as a leading cause of mortality. When considering the difference of life expectancies among men and women, it could be observed from 1920s until the mid of 1960s it has been similar for both. From their onwards female life expectancy has risen than male counterparts drastically (figure 6). In Asia, this wide variation in life expectancy in men probably reflects the healthcare provision, men's lifestyle and environmental factors such as war and pollution (Ghaffar et al. 2004).

Figure 6. *Life Expectancy at Birth, Sri Lanka by Sex, 1921-2012*



Source: Department of Census and Statistics 2016.

Chronic non-communicable diseases have now become the primary cause of mortality and, morbidity in Sri Lanka, surpassing communicable diseases as the major health problem. More than 83 percent of the deaths reported in Sri Lanka have occurred due to NCDs at present (World Health Organization 2018). Probability of premature deaths due to NCDs among male and female show a considerable difference in Sri Lanka. Survival probabilities propose that men are progressively open to high-risk mortality elements, focus on men's health in Sri Lanka is rarely visible and can be regarded as a largely neglected health aspect. Although there are general discussions about the gender gap in life expectancies, a serious attempt has not been taken so far to provide a rational explanation for such a significant difference (Dissanayake 2014). This study endeavors to offer a reasonable explanation as to why there is a broadening gap in non-communicable diseases between men and women and the spatial distribution of the NCDs. It is understood that such an effort will expose multifaceted nature of health issues of men and women which have substantial influence on the health and welfare of the population. Literature reveals that there are regional differences in the demographic factors which affect the prevalence and mortality of NCDs. Moreover, studies have also highlighted the influence of the gender aspect in the prevalence of NCDs. This study aims to identify the gender differentials based on mortality data of leading NCDs prevailing in CRVS systems in Sri Lanka.

Literature Review

This section reviews the literature from local studies as well as international studies related to the trends and patterns and influencing factors for non-communicable diseases in Sri Lanka. This further explores conceptual and empirical literature of factors influencing non communicable diseases in Sri Lanka. I have searched literature with the key terms for articles published for last two decades. I restricted the search to articles available in English. I have identified a comprehensive systematic review that included all articles identified through our search up to present. Identified studies, have been divided into sub themes such as premature deaths and NCDs, socioeconomic inequalities in non-communicable diseases, NCDs and behavioural risk factors, knowledge, and attitudes toward NCDs, Policy analysis on NCD prevention. Most relevant studies are included in four subheadings and presented as follows. Moreover, out of all the studies listed, conceptual and empirical literature has been identified. There were more of empirical literature and very less no of conceptual literature available on NCDs and its risk factors. All the studies included in this section are empirical literature.

NCDs account for over 50 percent of the adult disease burden in South Asia. Almost all non-communicable diseases are influenced by environmental factors. Sedentary lifestyles, extreme poverty, and insufficient health systems are all obstacles to treating the non-communicable disease epidemic in South Asia (Ghaffar et al. 2006). There are main risk factors that affect NCDs as stated by the WHO, and they can be identified as biological, behavioural, environmental, demographic, and socio-economic factors (WHO 2021). According to the STEPS survey, Sri Lanka more than 90 percent of the Sri Lankan adults were estimated to have at least one of the NCD risk factors, with similar prevalence in males and females. (Ministry of Health, Nutrition, and Indigenous Medicine 2015). Through this study, it is intended to focus on the literature that emphasizes the effect of the risk factors.

Within the same country due to geographical disparities at the regional context, there could be differences in the risk factors that affect NCDs. Demographic, socio-economic factors that are affecting NCDs could also change based on these regional level disparities (Rajagopal et al. 2016). Of the 5188 total respondents who participated in the STEP survey, majority were females while others were males. More than half had completed the secondary education. Mean number of years of education was 9.7 in males and 9.9 in females. Majority were Sinhalese (76.6 percent) while 12.4 percent were Sri Lankan Tamils and 8.5 percent were Sri Lankan Moor. Nearly 47 percent estimated monthly household earning of more than Rs. 20,000/- per month (Ministry of Health, Nutrition, and Indigenous Medicine 2015). Household income and expenditure survey (HIES), Sri Lanka 2016 data also note that the incidence of NCDs is higher for females compared to males. However, according to the WHO, males (30-70 years) in Sri Lanka are at a greater risk of dying prematurely due to NCDs, compared to females. It is also useful to look at the patterns of reported incidences of NCDs for both men and women by age groups. The incidence of NCDs starts increasing gradually after reaching the age of 25 years, with around 5 percent observed to be suffering from

NCDs. After the age of 35 years, there is a sharp increase in the incidence of NCDs, reaching around 60 percent after 70 years (Nanayakkara 2021)

The analysis based on HIES; Sri Lanka shows that the reported incidences of NCDs are lower among the poor. These findings indicate that some men and those who are poor may not be aware that they are suffering from NCDs (Department of Census and Statistics 2016). As such some of these conditions can go unnoticed till it is too late. According to the WHO, this makes treating these diseases more expensive and complicated.

A study which was conducted by taking patients from the regions of Kinnasa and Luthunga, it was identified that majority of the patients suffer from high blood pressure and heart diseases and majority of them to be males. Among the males that were identified, four out of five were addicted to drugs and indicated that males are more vulnerable in suffering from NCDs (Renaud et al. 1998). South Asian cultural belief that 'men are stronger' may also be playing an important part by preventing men seeking timely health treatments until they become chronically ill. Such a behavioral pattern can make men's survival chances weaker especially at adult ages (Disanayake 2014).

Data and Methods

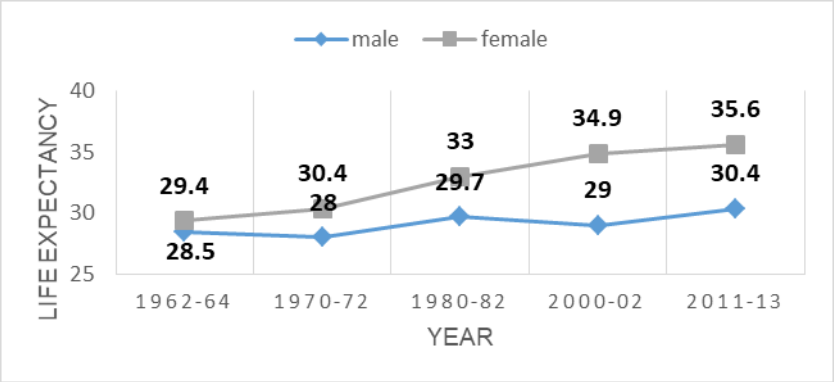
The study is conducted based on the secondary data collected from the Registrar General's Department, Sri Lanka covering 2010 to 2015 and data gathered by Department of Census and Statistics 2011-2013 to calculate life expectancies. These years were selected for the study since that was the latest years in which the above mentioned data was available. Vital statistics are derived from the Civil Registration System (CRS) and customarily tabulated according to the year of registration. Life expectancy of Sri Lanka is decomposed using life table decomposition techniques. Arriaga's decomposition method was used to find how much contribution that each cause of death category made to the sex difference of the life expectancy (Arriaga 1984). Cause specific death rates for selected diseases have been calculated using number of deaths and the mid-year population for different districts. Calculated cause specific death rates have been utilized and visualized using ArcGIS mapping to distinguish the variations within the country. Having an accurate vital statistics system was very useful for tracking gender inequalities of NCDs among regional levels.

Results and Discussion

Life expectancy at age of 45 is concerned, there is a visible increasement of the male female gap which is shown from the figure 7 below. As indicated by the figure, it is noticeable that over the years, the gap between the life expectancy of males and females at the age of 45 years has been increased. Gap between the life expectancy at birth, which was at a value closer to the zero has eventually increased by the years 2011-2013 from 35.6 years for females and 30.4 years for

males by creating a gap of 5 years. According to a study conducted by Alessandro Feraldi & Virginia Zarulli, the largest contributions to the sex gap in LE were given by old ages and that over time these differences shifted to even older ages. Regarding neoplasms and heart diseases, the age group 70–75 years made the largest relative contributions in Western European countries, in US and in Japan (Feraldi and Zarulli 2022).

Figure 7. *Life expectancy at Age 45 by Sex, 1962/64-2011/13*

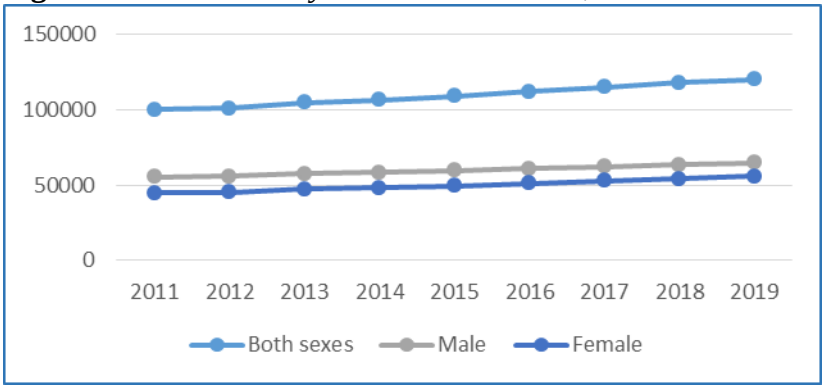


Source: Department of Census and Statistics 2016.

This scenario is further explained through the number of survivors at the age 45 years in the life table. It is evident through the nlx value for 40 years and above that along with the increasing age, number of male survivors has begun to decrease in a significant manner compared to their female counterparts. This decrease in the survivors has initially commenced from the 40 years of age, but this difference has been magnified after the 55 years of age according to the data collected by DCS, 2016. In such a scenario, it is important to identify the impact of NCDs as the majority of the recent deaths have occurred due to NCDs.

Considered the deaths due to non-communicable diseases in Sri Lanka, it has been noted that the deaths have gradually increased from year 2011 to 2019 (Figure 8). Number of male deaths has recorded higher compared to the female deaths throughout the years.

Figure 8. *NCD Deaths by Gender in Sri Lanka, 2011-2019*



Source: World Health Organization 2020.

In eminence to that, the study tries to identify the age group which has the highest contribution to the life expectancy through the decomposition of the life expectancy. With the data used from the life table of 2011-2013, the life table decomposition calculations are conducted to further explore the gender differences and contributing age groups for the life expectancy gap are shown from Table 3.

Table 3. *Decomposition of Life Expectancy for Sri Lanka, 2011-2013*

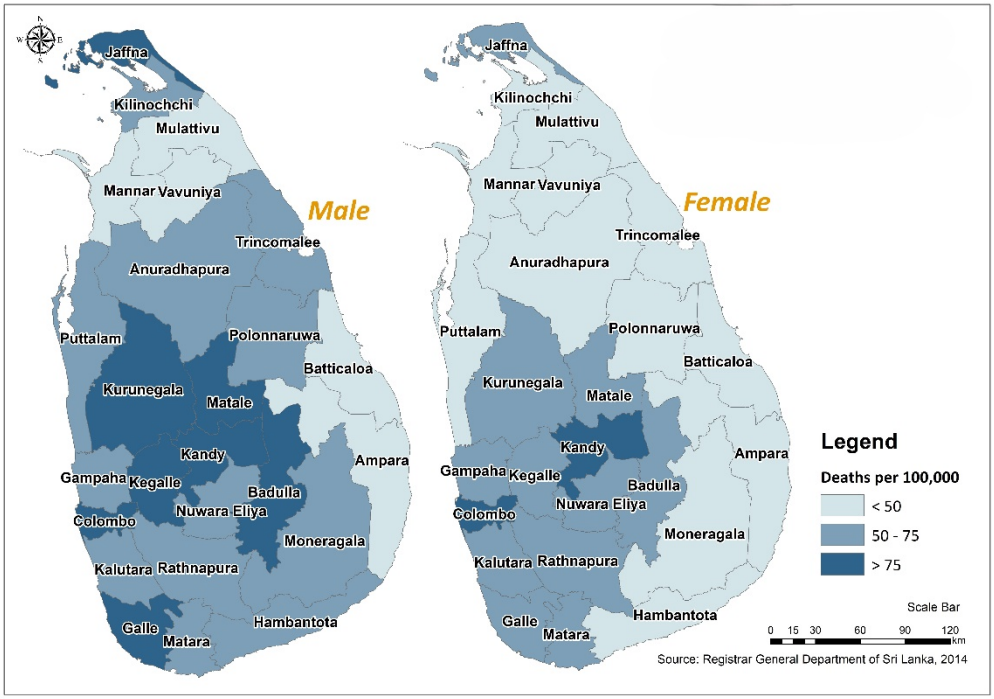
Age	Direct effect	Indirect effect	Sub total	Interaction effect	Total	Percent of total
0-14	0.0467	0.217994	0.264694	0.024048	0.288742	4.37
15-29	0.072371	0.509874	0.582245	0.067794	0.650039	9.85
30-44	0.127423	0.605854	0.733278	0.103222	0.8365	12.67
45-59	0.398841	1.142819	1.54166	0.232184	1.773844	**26.87**
60-74	0.885228	1.054228	1.939456	0.208306	2.147762	**32.53**
75+	0.904733		0.904733		0.904733	**13.70**
Total	2.435296	3.530769	5.966065	0.635555	6.60162	100.00

Source: Authors calculations 2022.

The highest contribution could be identified via the indirect effect (change in the number of survivors at the end of that age interval from a mortality change within a specific age group) for the gap between males and females life expectancy at birth with a value of 3.53. When the contribution of the each age group for the pace of mortality is concerned, it could be identified that after the age of 45 years the contribution of the age group has been increased. In accordance with previous studies, current findings showed that the sex gap in LE was increasingly driven by differences in mortality at older ages for all the countries within the period 1998–2016 and that, overall, the gain in LE was larger for males than for females (Meslé and Vallin 2011, Thorslund et al. 2013).

The leading NCDs in Sri Lanka can be identified as cardiovascular diseases, Cancer and the diabetes. 34 percent of deaths due to cardiovascular diseases, 14 percent on Cancers, 8 percent due to chronic respiratory diseases and 9 percent due to Diabetes were reported in the year 2016. When considering the reported deaths due to selected three diseases, it is noticeable that higher percentage of men suffer from cardiovascular diseases and cancers than the counter part of women. A similar percentage of deaths were reported due to diabetes among men and women. Author calculated cause specific death rates identifies the most vulnerable districts for selected diseases are shown from below maps.

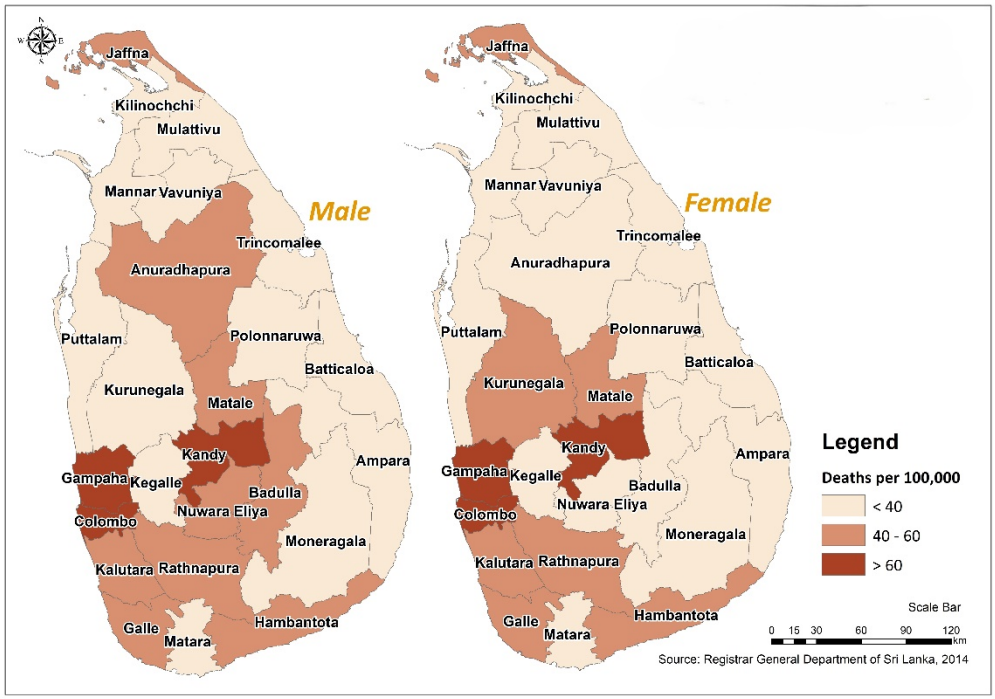
Map 1. *Spatial Distribution of Cancer by Sex and the Districts of Sri Lanka, 2014*



Source: Registrar General's Department 2014, Department of Census and Statistics 2016

A key challenge faced here was that CRVS have collected data on place of death not the usual place of residence up until first decade of the 21st Century. Hence the comparisons based on the local regions could not be identified. The results indicate that the highest number of deaths due to cancer were reported from the districts of Jaffna, Matale, Kandy and Colombo. Spatial distribution of Cancer disease by the districts of Sri Lanka is concern, the highest number of female deaths have been reported from the districts of Kandy, and Colombo. On the other hand, more male deaths have occurred in the districts of Galle, Kurunegala, Kegale, Matale, Badulla and Jaffna in comparison to the districts of female deaths. Also, many districts have been reported for least number of female deaths when compared to Male. These results confirms the results of the Katulanda's study conducted in Sri Lanka; 15.25 of all deaths due to neoplasm and these risks are related more to men than women (Katulanda et al. 2008).

Map 2. *Spatial Distribution of Diabetes by Sex and the Districts of Sri Lanka, 2014*



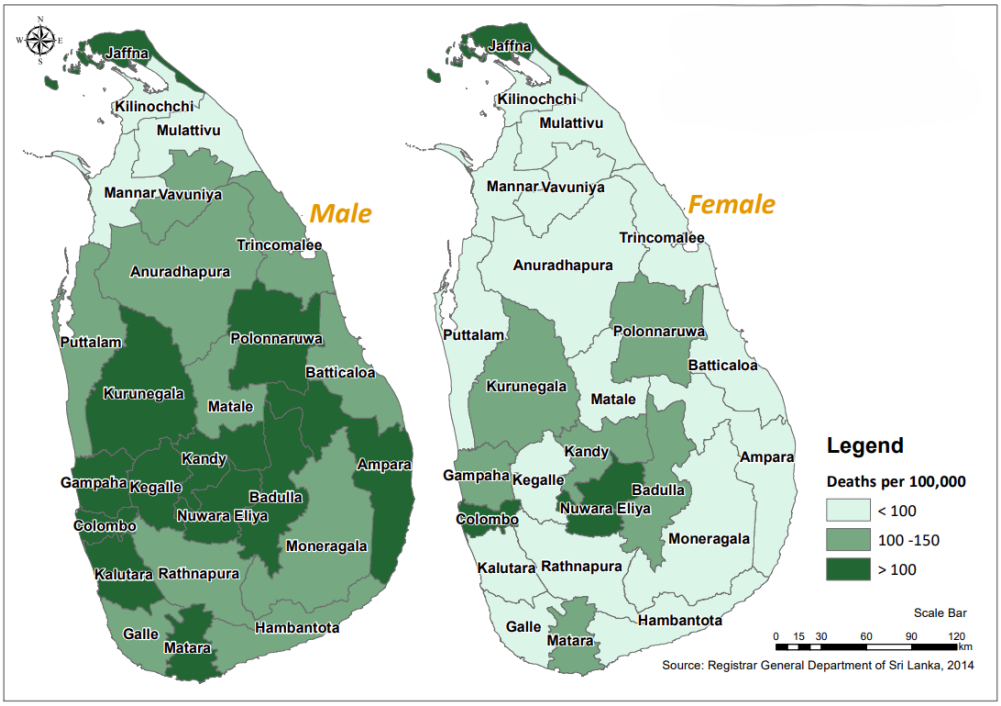
Source: Registrar General's Department 2014, Department of Census and Statistics 2016.

The highest number of deaths due to diabetes have been reported from the districts of Gampaha, Colombo and Kandy. The second map represent the spatial Distribution of Diabetes Disease by Sex by the Districts of Sri Lanka. According to the map, the highest number of deaths of both sexes have been reported from same districts namely Gampaha, Colombo and Kandy. Nuwara Eliya, Badulla and Anuradhapura districts reported a moderate number of male deaths and a lower number of Female deaths. Also, Kurunegala district has a lower number of Male deaths but a moderate number of female deaths. Other than those few dissimilarities, the entire country shows a similar death results over both genders. Interestingly, in the Maldives, recent analysis by Anurana et al. indicates that the profiles for obesity, hypertension and diabetes are either mixed or run in the opposite direction to that in Sri Lanka. There, the gradient for diabetes in both sexes and in males was negative with increasing socio economic status. It has been identified that one in five adults in Sri Lanka has either diabetes or pre-diabetes and one third of those with diabetes are undiagnosed (Wijesuriya 1997) which alarms a serious concern for management of health in the country.

A higher percentage of deaths due to cardiovascular diseases were reported from Jaffna, Colombo, Kandy, Nuwara Eliya and Polonnaruwa districts. Further, the gender differentials of the diseases by districts have been discovered and identified that the mortality among men is greater than women in most of the districts. The change of the age structure in different districts reveals an association with the mortality of NCDs. The map 3 demonstrate the spatial distribution of heart disease by the districts. According to the maps, it can be seen that a least

number of male deaths have been recorded only in 3 districts namely Kilinochchi, Mulattivu and Mannar. All the other districts accounted for moderate and higher number of deaths. On the other hand, only a few numbers of districts recorded a moderate and higher number of female deaths whereas many districts have been recorded a least number of female deaths due to heart disease. Accordingly, we can notice that heart diseases have mainly affected for males rather than females.

Map 3. *Spatial Distribution of Cardiovascular Diseases by Sex and the Districts of Sri Lanka, 2014*



Source: Registrar General's Department 2014, Department of Census and Statistics 2016.

According to the Institute for Health Policy- technical report series 1 results, patterns of inequalities in cardiovascular risk factors in Sri Lanka fall in between the patterns reported in India and other developing countries and those observed in developed countries, with perhaps the country transitioning between the two patterns (Rannan-Eliya et al. 2010). This would be consistent with the patterns observed in the Maldives, whose higher living standards and level of modernization, probably place it further ahead in the transition. Among the diseases of circulatory system, ischemic heart diseases, other heart diseases, hypertensive diseases and cerebrovascular diseases are the greatest killers of men during those ages in Sri Lanka (Dissanayake 2014).

Limitations

It has been observed that the vital statistics in Sri Lanka is readily available for the year 2014 only at present. Even though the deaths are registered within two

weeks, it takes a longer period to process and be available for the use. These implications hinder the implementation of policies which address the most recent issues due to the unavailability of the most recent data. This mainly affects when implementing gender-focused policies when there is a lack in the sex-aggregated data to draw conclusions.

NCDs and Sustainable Development

The Sustainable Development Goals (SDGs) are a set of goals and targets set by the United Nations to be accomplished by 2030. Reduce premature mortality, increase substance use prevention and treatment programs, implement tobacco control policies (FCTC), and attain universal health coverage with access to critical medications and technologies are all aims connected to NCDs. As a result, the World Health Organization set global targets for the prevention and management of NCDs in 2013, which included nine targets and 25 indicators for addressing mortality, behavioral risk factors, and health system responsiveness to treatment (WHO, 2021). To "Leave no one behind," the SDG no. 3 focuses on "Good health and well-being," with an aim of reducing premature mortality from non-communicable diseases by one-third through prevention and treatment by 2030, as well as promoting mental health and well-being. Target 3.4 directly connected with NCDs, and it is i.e., by 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

Conclusions and Recommendations

The research examines the causes that contribute to creating a disparity in life expectancies between males and females. The research is concerned with the role played by non-communicable diseases in creating the aforementioned disparity. It has been identified that men are vulnerable to suffer from NCDs more than the female counterparts.

This study further scrutinizes what those high-risk morbidity factors are and to what extent, men and women are susceptible to higher risk. In relation to the cardiovascular diseases, cancers and diabetes, it was found that men are in a more hostile position in promoting their survival chances. When the gender differentials of the diseases by districts have been discovered and the mortality among men is greater than women in most of the districts. The results indicate that different districts are dominant for the selected NCDs where Colombo and Kandy districts are common for all three diseases. Although most causes for diseases are amenable to medical interventions, sex differentials of non-communicable diseases can be attributed to factors other than such interventions.

This would benefit in the policy planning related to the management of the health and well-being of the population by identifying the sex differentials and most vulnerable geographical locations for NCDs and applying preventative

measures to promote achieving UN SDG 3, Good Health and Wellbeing. The unavailability of the most recent data in CRVS mainly affects the implementation of policies which address the most recent issues.

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What Factors Affect the Attractiveness of Nursing Profession?

By Mari Salminen-Tuomaala[*]

Effective measures are required to mitigate the persisting nursing staff shortage. The identification of factors for choosing the profession is important for planning recruitment strategies. This study presents nursing students' perceptions of factors that had influenced their decision to apply for the nursing program. Data was collected in March 2022 from 94 first, second and third-year nursing students in Finland. The qualitative data was analyzed using inductive content analysis. Factors that could make nursing more appealing:

1. Advancing the role of nursing at the level of individuals, organizations, and society
2. Meaningful nursing duties
3. More influence over one's work
4. Better working conditions and well-being at work
5. Development of nursing leadership
6. Work and career advancement

Factors that can decrease the appeal of the nursing profession:

1. Decreased appreciation of nursing within the profession and in society
2. Mismatch salary vs. demanding workload and working conditions
3. Mismatch between staff resourcing and workload
4. Lack of support and encouragement from leaders
5. Working atmosphere detrimental to psychological well-being

It is essential to invest in promoting the image of nursing at the level of individuals, organizations and society and to support nurses' occupational wellbeing and career pathways.

Keywords: *Attractiveness, nursing, nursing students, experience, Webropol research*

Introduction

Nursing staff shortage is internationally an alarming problem and the crisis is expected to deteriorate over the next years (Van der Heed and Aiken 2013, World Health Organization 2016, Drennan and Ross 2019). The demand for nurses is increasing globally; 9 million new nurses (International Council of Nursing 2023) and 40 million new social and healthcare professionals may be needed by 2030 (World Health Organization 2018). Effective workforce planning is required to

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ensure sustainable health systems (Drennan and Ross 2019). Recruitment and retention of nurses to ensure safe, first-rate care are thus major concerns for hospitals and other healthcare organizations (World Health Organization 2020).

Also Finland, where this study was conducted, faces a long-term shortage of qualified healthcare staff (Ministry of Education and Culture and Ministry of Social Affairs and Health in Finland 2023). There is a need for professionals with an extensive basic competence, but also for nurses with specialist knowledge and skills. Given the demographic changes in Europe, including Finland, the need for healthcare professionals will likely continue to grow. Both the population and the workforce are ageing (Wismar et al. 2018).

The need to increase the appeal of the nursing profession has been recognized nationally and internationally. The image of the profession requires strengthening. Recent reports have revealed decreased work satisfaction, linked with developments like a skewed work-life balance or the COVID-19 pandemic (International Council of Nursing 2023).

Social and healthcare education is still a popular career choice in Finland, although a negative trend has been observed recently. The practical nursing option (upper secondary vocational qualification) has become less interesting to applicants, compared to the year 2010. There were fewer applicants than places in the period 2017–2020 (Lith 2021). The appeal of nursing degree programmes at Universities of Applied Sciences also decreased in relative terms from 2022, although in absolute terms the number of new students grew, due to the increased volume of student places (Ministry of Education and Culture and Ministry of Social Affairs and Health in Finland 2023). The government in Finland (2023) seeks to prevent dropouts from nursing schools and from the nursing profession and to promote international students' opportunities to undertake practical training (Ministry of Education and Culture and Ministry of Social Affairs and Health in Finland 2023).

The identification of factors for choosing the nursing profession is essential for planning recruitment strategies. This study presents Finnish nursing students' perceptions of factors that generally affect the attractiveness of the profession and of factors that had influenced their personal decision to apply for the nursing programme.

Literature Review

Drawing from an international scoping review, (Drennan and Ross 2019), it could be suggested that the appeal of nursing profession is affected by nurses' perceived "net advantage" associated with the job. It combines individual factors (including competence and family), job characteristics, the organization (e.g., image, whether private or public) and the location of the workplace (Drennan and Ross 2019). Much of the nursing research deals with job characteristics and healthcare organizations.

In Finland, the attractiveness and retention in nursing have been studied from the perspective of nursing students (Salminen-Tuomaala and Herttuala 2022, Salminen-Tuomaala 2023a), nurse teachers (Salminen-Tuomaala 2023a) and

nursing professionals (Coco 2019, Coco and Roos 2020, Helander et al. 2019, Keto 2024). Based on studies with nurse leaders, nurses and practical nurses, the appeal of the profession has decreased, but nursing is still considered a meaningful, important career (Coco 2019, Coco and Roos 2020). According to nurse leaders, nursing has suffered from staff shortage, poor pay, physical and psychologically demanding work, workplace violence and constant change (Coco and Roos 2020). Novice nurses feel overwhelmed by the increasing workloads and demands (Helander 2019); many of them, faced with stress and burnout symptoms, consider leaving the profession (Kox et al. 2020, Kox et al. 2023). Lack of personal support at work is one of the factors diminishing the appeal of nursing (Salminen-Tuomaala and Seppälä 2022).

On the other hand, several studies have concentrated on factors that increase the attractiveness of nursing (Al-Hamdan et al. 2017, Goodare 2017, Seitovirta, 2018, Slåtten and Lien 2022, Smit and Lawson, 2022, Salminen-Tuomaala 2023a, Salminen-Tuomaala 2023b). Important contributors to the attractiveness and retention in nursing have been found to involve safety, appreciation and pay that equates with the level of responsibility (Nurdiana et al. 2019). Strong support from nurse leaders (Nurdiana et al. 2019) and compassionate leadership (Salminen-Tuomaala and Seppälä 2022) with open interaction (Herttuala et al. 2023) can help retain the workforce. Nurses working in emergency medical services also emphasized pay, leadership and collegiality in improving nurse recruitment and retention (Keto 2024.)

Other factors important for the attractiveness and retention of the profession have been found to involve professional development, career opportunities (Slåtten and Lien 2022, Smit and Lawson 2022) and systematic orientation programmes (Brook et al. 2019). The transition-to-practice programmes implemented report improvements in retention, wellbeing and clinical competence (Melissant et al. 2024). The programmes involved experienced nurses mentoring newcomers individually or in groups, for example on clinical decision-making and specialized skills. According to a systematic review, the length of successful interventions was 27–52 weeks. (Brook et al. 2019, Ojala et al. 2020). Besides mentoring, clinical work supervision may help reduce turnover (Ojala et al. 2020). Also physical and social factors should be addressed in efforts to promote job satisfaction and commitment (Colombo 2016). Nurse leaders' wellbeing at work should not be overlooked either, as reminded by Herttuala et al. (2023).

The latest generations to enter the labour market (z and y) may have different expectations, compared to earlier generations. For example, it has been suggested that the youngest working generation (z) have shorter attention spans and appreciate more experiential and interactive learning compared to earlier generations. Their recruitment and retention may require personalization, digitalization and alignment with their lifestyle choices (Tussing et al. 2024). In the generation preceding generation z, millennial nurses have been reported to be significantly less satisfied with their work compared to earlier nurse generations and more likely to have perceptions that may have an adverse effect on job satisfaction and engagement. Effective strategies to address the needs of the millennials might include ongoing

mentoring, support for professional development and positive feedback (Waltz et al. 2020).

The Aim of the Study

The study aimed at producing information that can be used to make the nursing profession more attractive to potential workforce.

The research problem was:

What factors are associated with the attractiveness of the nursing profession?

Data Collection and Analysis

A total of 168 first, second and third-year nursing students in a Finnish University of Applied Sciences were contacted via e-mail and informed of the study in March 2022. A digital (Webropol) survey with quantitative and qualitative questions was used. This article reports the findings for the qualitative items only.

The purpose of the qualitative data collection was to produce information for inductive analysis, to bring out phenomena essential from the study perspective study and to reveal things, which might otherwise remain unnoticed (Flick 2018). Phrases and sentences that formed a meaning unit or represented a response to the research problem were the unit of analysis in this study (Graneheim and Lundman 2004).

After reading the participant contributions through several times to gain an overview of the data, the investigator picked out relevant phrases and sentences, leaving out empty filler words. These reduced items were colour-coded, grouped into categories and provided with descriptive titles. A further study and comparison of these categories yielded more abstract, higher order categories. Finally, these higher order categories were collapsed into the main category (Graneheim and Lundman 2004, Elo et al. 2022).

Research Ethics and Rigour

The study followed national guidelines on research integrity (Finnish National Board on Research Integrity TENK 2023). Research permission was granted by the Director of Research and Innovation at the University of Applied Sciences, where the study was conducted. Participation was voluntary and the participants remained anonymous.

Qualitative research can be evaluated from the perspectives of credibility, confirmability, reflexivity and transferability (Kylmä and Juvakka 2012). The fact that nursing students responded to an open question based on their personal experiences, increases the credibility of this study. To ensure confirmability, the research process was described as far anonymity allowed. Having had a long

career in nursing, the investigator reflected on her preconceptions of the topic to minimize researcher bias. Such insight into one's biases and rationale for decision-making is critical to rigour. Study rigour was further supported by a clear and focused research question. Finally, a short description of the study context and participant backgrounds makes it easier for readers to assess the transferability of the findings internationally. The findings are at least transferable to Finnish nursing contexts.

Results

The response rate was 56% (n=94). All participants were Finnish-speaking citizens of Finland. Most participants, 91.5%, were women. The age range was 20-60 years (mean 28 years, median 25 years). Part of the participants had a vocational qualification (practical nurse) and a few had a Master's degree in another field. Many participants had experience of nursing through their work as practical nurses.

The two-fold results are presented under the titles *Nursing students' perceptions of what increases the attractiveness of the nursing profession* and *Nursing students' perceptions of what decreases the attractiveness of the nursing profession*, with six and five and sub-categories respectively. The results include translations of direct participant quotes.

Nursing Students' Perceptions of What Increases the Attractiveness of the Nursing Profession

According to the nursing students, the following six sub-categories were significant for the appeal of the nursing profession: *(1) Advancing the role of nursing at the level of individuals, organizations and society; (2) Ensuring meaningful nursing duties; (3) Increasing influence over one's work; (4) Improved working conditions and wellbeing at work; (5) Development of nursing leadership; and (6) Work and career advancement.*

First, the participants emphasized the importance of appreciating the nursing profession individually, and at the levels of organizations and society. The appreciation of nursing should start with every nurse and their attitude towards the profession, colleagues and nursing practice. Appreciation from supervisors, clients/patients and peers was considered essential for making the profession appealing to new applicants. The image of the profession should be improved and the concrete effects and usefulness of nursing publicized more widely. To give examples of the participants' statements: "Improving the image of the profession, making authentic successes known to the public through social media" and "revealing the role of nursing in alleviating human suffering".

Second, the participants commented on the importance of offering a wide variety of meaningful nursing duties. Variability, specialization options and a chance to deliver individual, high quality nursing without hurry, were mentioned as means to increase the attractiveness of the profession. One participant listed, "a

genuine experience of helping, sufficient time to encounter patients, your work makes a difference".

Third, the participants felt that having more influence over the work and work conditions, for example through planning of more flexible working hours, would improve the appeal of the profession. An open, flexible and dialogical workplace culture was also mentioned. In the participants' own words, " the possibility to influence your working hours"; "supervisors taking employees' ideas and wishes into consideration when they develop the working conditions"; and "open interaction between ward manager and nurses, listening to all nurses".

Fourth, the participants commented on the importance of occupational wellbeing. This could be achieved through investing in a good working atmosphere and working conditions. As one participant formulated, the organization should "invest in factors that improve occupational wellbeing". The factors mentioned that could improve new recruits' occupational wellbeing, commitment and feeling of safety, included long-term work contracts and early career mentoring. The participants stressed the importance of flexibility when addressing employees' individual needs, wellbeing and family situations. They said, for example, "flexible rota planning, taking family situations into account". Other factors included reasonable workloads and salaries, and effective communication to keep the whole staff properly informed. Respect for nursing values, ethical principles and collegiality, were also mentioned in the participant contributions. For example, "fostering collegiality, bringing a strong sense of ethical values".

Another proposal from the participants was to develop nursing leadership. The participants suggested that a deeper level of consideration and appreciation towards employees would make the profession more appealing to the potential workforce. Humanity, compassion and flexibility were called for. To quote the participants, "A humane and friendly attitudes towards employees; compassion and encouragement are needed"; and "An encouraging, compassionate leader can help retain the employees in the organization, and its good reputation will attract new nurses into the system".

Last, the participants mentioned career development as a means to improve the appeal of the nursing profession. As examples, they listed effective orientation, learning opportunities at work and further training paid by employers. The profession would be much more interesting, if organizations effectively supported nurses' efforts to pursue further education and offered positions that met their qualifications. Examples of the participants' comments included "Making continuous learning possible at the workplace"; "Career advancement, appreciation of further training and creation of a position that matches your education"; and " If you complete a Master-level degree at a University/University of Applied Sciences, you should get a position that matches your education and a higher salary".

Nursing Students' Perceptions of What Decreases the Attractiveness of the Nursing Profession

In contrast, the following five sub-categories represent study participants' perceptions of what decrease the appeal of the nursing profession: *(1) Decreased*

appreciation of nursing within the profession and in society; (2) Mismatch salary vs demanding workload and working conditions; (3) Mismatch between staff resourcing and workload; (4) Lack of support and encouragement from leaders; and (5) Working atmosphere detrimental to psychological wellbeing.

Many study participants felt that, compared to earlier decades, nursing had become less appreciated among nurses themselves and in society in general and its image had suffered. Negative publicity in the news and social media, for example nurses' own recounts of their experiences or of notorious workplaces, were likely to decrease the appeal of the profession. To quote some participants, "Talking about the miserable salary and poor leadership in the social media"; "This commotion about nurses' salaries, strikes, guilt-tripping nurses"; and, "The social media exacerbates grievances".

Second, many study participants agreed that the compensation nurses received was not commensurable with the job requirements and working conditions. The nurses' education and level of responsibility was not reflected in their earnings. The physical and psychological stress, fixed term employment contracts and the occasionally poor or demanding working conditions all contributed to the decreased appeal of nursing as a profession. In the participants' own words, " Constantly working beyond your strength, too long shifts, hard work"; "One contract after another for substitutes and not having any holiday affects your motivation"; "The salary is too low for the level of responsibility and demands"; and, " Temp jobs don't motivate you".

Third, the participants referred to the imbalance between the workload and staff resources as a circumstance that eroded the appeal of the nursing profession. In some organizations, the nurse-patient ratio was below the recommended level, and the situation was further aggravated by staff shortage. Excessive workloads, responsibility over a high number of critically ill patients, constant hurry and working overtime were mentioned as conducive to stress, exhaustion and feelings of inadequacy. If prolonged, the resources-workload balance could lead to lack of commitment and burnout. The participants described the situation as follows: "Increased workloads"; "No time to recover when you have extra shifts because of staff shortage and sick leaves; constant tiredness and palpitations"; "Fear of errors, because you are alone responsible for too many critically ill patients"; "Getting home you are so tired that you have no energy to do anything, you are close to tears".

According to the participants, lack of support from nurse leaders could also undermine the appeal of the nursing profession, especially if leaders failed to cultivate a compassionate and encouraging attitude towards the staff. The participants reported that some supervisors were inflexible, remained distant, did not acknowledge staff needs and wishes or did not seem to appreciate substitute nurses. Some quotes from the participants were: "The supervisor does not know staff members by name, does not appreciate their competence or the hard work"; "They pay no attention to the coping problems, you always have to stretch"; and "Nothing seems enough".

Finally, the study participants described a working atmosphere detrimental to psychological wellbeing, motivation and appeal of the profession. Competition,

jealousy and lack of collegiality among staff were mentioned as possible causes of a poor working atmosphere. Staff members were at risk of becoming cynical and "getting stuck in negative talk", talking behind each other's back or not treating nursing students fairly. According to the participants, a working atmosphere detrimental to psychological wellbeing was characterized by lack of sensitivity towards clients and colleagues. To quote two participants: "Lack of sensitivity, cynicism, indifference towards colleagues and patients when you get too exhausted"; "Students are not appreciated, they are allocated the hardest basic nursing duties; a full contribution is expected, which means you have no chance to ask questions. You don't dare to ask about new things, you just do the routine and try to avoid carped at."

Discussion and Conclusions

This survey with 94 nursing students presents students' perceptions of what increases and decreases the attractiveness of the nursing profession. The participant contributions seem to represent positive expectations and wishes on one hand, and experienced reality on the other hand. In other words, the results leave an impression of an imbalance of what nursing students desired and what they actually experienced in healthcare organizations. This finding is reminiscent of earlier research reporting young novice nurses overwhelmed by lack of perceived competence, heavy workload, work-life imbalance and inability to deliver high-quality care (Kox 2020). The findings may also reflect the different expectations of the latest generations to enter the nursing professions (Waltz et al. 2020, Tussing et al. 2024).

The participants stressed the importance of increasing the appeal of the nursing profession through influencing attitudes at the levels of individuals, organizations and society. Much depends on how the nursing professionals themselves communicate about their profession on social media platforms.

Other means that could increase the attractiveness of the nursing profession involved meaningful duties, career advancement options, influence over one's work and better working conditions. Support for personal wellbeing at work was considered essential. Nurse leaders should know their staff members by name and be available and genuinely present. Compassionate leadership, with encouragement and positive feedback and a supportive atmosphere without mutual competition or jealousy were called for to improve work motivation and commitment to the organization. The participants wished for an opportunity to practice nursing without constant time pressure and ethical burden. According to the results, employee wellbeing could be improved through open dialogue, flexible rota planning, longer work contracts and effective mentoring and orientation.

In contrast, the findings showed that negative social media publicity, for example during the Corona pandemic, and pay that did not equate with the level of responsibility, decreased the appeal of the profession. It is important to address the disparity between resources and workloads.

In conclusion, recruitment of new nurses calls for changes in attitudes and in the image of nursing at the levels of individuals, organizations and society. To make nursing a more appealing choice, nurse leaders could focus on nurses' career advancement and on their wellbeing at work through improved working conditions and compassionate leadership.

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