

The Burden and Coping Mechanisms among the Caregivers of Immobilized Elderly Patients: A Multinational Comparative Study

Abstract

Background: Caregivers face various difficulties that put a huge burden on them, especially when dealing with immobilized elderly patients. This study aimed to compare caregivers' burdens and coping mechanisms during the care of immobilized elderly patients. **Materials and Methods:** The descriptive comparative design was adopted for this study in Najran City, Saudi Arabia, and Damanhour City, Egypt, in 2022. A total of 104 caregivers were conveniently selected over 3 months of data collection using the following tools: Elderly Patient Caregivers' Knowledge, Elderly Caregivers' Practice, The Lazarus Coping Strategies Questionnaire, and Zarit Burden Inventory. The authors used descriptive statistics (mean, frequencies, and standard deviation) and inferential statistics (Chi-square, *t*-test, Pearson correlation, Spearman correlation) to analyze the data. **Results:** In Najran, 57.70% of caregivers experienced a mild level of burden compared to 30.80% in Damanhour, indicating a significant difference in the total level of burden between the two groups ($X^2 = 7.90$, $df = 2$, $p = 0.01$). The mean coping mechanism score among caregivers in Najran is significantly higher than the mean among caregivers in Damanhour. The duration of providing the care significantly influenced the total level of burden, the total level of practice, the coping mechanism, the income, the availability of health care, and the presence of additional caregivers, with all *p* values <0.05 . **Conclusions:** It is essential to integrate nurses and caregivers into educational programs to help them cope effectively with the challenging duties they undertake. Based on the findings of this study, interventional studies to reduce the burden and improve coping among caregivers are recommended.

Keywords: Caregivers, caregivers' burden, coping skills, elderly, immobilization, internationality

Introduction

The world's senior population will continue to increase at an unheard-of rate due to advancements in life expectancy and medical technology. The number of older adults is continuously increasing all over the world. According to a report by the World Health Organization (WHO), the proportion of people aged 60 and up was 4.40% in 1976, 5.75% in 1996, 6.27% in 2006, 6.90% in 2015, and 9.20% in 2021. The ratio is forecasted to be 20.80% in 2050. In the Kingdom of Saudi Arabia (KSA) and Egypt, older adults (aged >60 years) comprise approximately 5.20% of the total population. This percentage is expected to reach 8.10% by 2025 and 21.80% by the year 2050.^[1] Elderly persons are vulnerable to possible hazards such as chronic illnesses, loneliness, isolation, a lack of social support, a reduction in independence, and immobility as they advance in age.

Immobility is the inability to move or change positions without help. The complication of immobilization is generally easier to prevent than to treat or cure.^[2] Almost every organ system is impacted by prolonged immobility.^[3] Caregivers, including nurses and informal caregivers, play a vital role in fostering older people's health, happiness, functional independence, and quality of life. They can range from helping with everyday duties to delivering direct care to guiding the care receiver through complex healthcare and social service systems.^[4,5] Providing care through caregivers for patients supports the patients and the healthcare system. Caregivers are being challenged with various physical, social, mental, and financial difficulties that put a huge burden on them.^[6] According to earlier research, caregiver attributes such as gender, level of education, work conditions, closeness to the caregiver, and length of

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stay with the care recipient were predictors of caregiver burden. For instance, a study conducted among Croatian caregivers revealed that the gender of the person with disabilities, the length of time spent providing care, and the caregiver relationship predict caregiver burden.^[7]

The predicted rise in older adults around the world is associated with chronic conditions such as immobility, which imposes a significant burden on nurses and other caregivers. It is necessary to understand that caregivers play an important role in providing care to their immobilized patients, and they should be aware of the possible complications and preventive measures.^[8] The caregiving burden is influenced by several factors such as the country's culture, health system, financial resources, and coping mechanisms.^[9] This conclusion is in line with the results of studies conducted in Egypt, Indonesia, and China studies.^[10-12]

This study is the first of its kind in the Arabic region that compares results between two of the largest countries in Arabic and Middle East regions. The motivation behind conducting this study stemmed from the noticeable differences between Saudi and Egyptian societies. Saudi Arabia is a high-income country dependent on foreign non-native nurses and caregivers, while Egypt is a low-income country reliant on native nurses and caregivers. Both Egypt and Saudi Arabia are among the largest countries in terms of size and population in the Middle East. The study aimed to compare caregivers' burden and coping mechanisms during the care of immobilized elderly patients in Najran City, Saudi Arabia, and Damanhour City, Egypt.

Materials and Methods

The study adopted a descriptive comparative design and was conducted between August 2022 and February 2023. It took place in Najran City, Saudi Arabia, and Damanhour City, Egypt. The target population included all nurses and informal caregivers providing care for elderly patients. The accessible population comprised nurses and informal caregivers who were accessible to the researchers, agreed to participate, and met the following inclusion criteria: providing care for elderly patients aged 60 years or older and caring for immobilized individuals of both genders. The sample size and power analysis were calculated using Epi-Info 7 software version 2002. Epi Info™ is a public domain suite of interoperable software tools designed for the global community of public health practitioners and researchers. It provides an easy data entry form and database construction, customized data entry experience, and data analyses with epidemiologic statistics, maps, and graphs for public health professionals who may lack an information technology background. Epi Info™ is utilized for outbreak investigations; developing small to mid-sized disease surveillance systems; Analysis, Visualization, and Reporting (AVR) components of larger systems; and

continuing education in the science of epidemiology and public health analytic methods at schools of public health worldwide. The criteria used for sample size calculation were as follows: an alpha of 0.05, a power of 0.8, and a medium effect size of 0.5. The sample size, based on the previously mentioned criteria, was determined to be 104 caregivers selected conveniently over a 3-month data collection period (October to December/2022). The authors employed the following tools for data collection: Tool (I) Structured Questionnaire: This questionnaire consists of four parts: Part 1, Sociodemographic characteristics of the caregivers, including age, gender, marital status, educational level, residence, and occupation; Part 2, Elderly Patient Caregivers' Knowledge; this part evaluates participants' knowledge about preventing immobilization complications. Responses were scored based on correctness and completeness, with three points awarded for a fully correct answer, two for incomplete answers, and one for incorrect or "don't know" responses. Knowledge levels were categorized as good (more than 75%), moderate (50–75%), or poor (less than 50%); Part 3, Assessment of Elderly Caregivers' Practice, developed by the researchers after reviewing the recent literature; this part evaluates caregivers' practices concerning skin care, passive ranges of motion, patient repositioning, and deep vein thrombosis prevention measures. Each item is rated on a three-point scale: three points for competent practice (safe and professional), two for acceptable practice (safe but not professional), and one for incompetent practice. The overall score for all questions was standardized to 100% and categorized into two groups: incompetent (less than 60%) and competent (more than 60%). This cutoff point was determined based on the general threshold for success in competencies in both countries; Part 4, The Lazarus Coping Strategies Questionnaire, developed by Lazarus,^[13] this tool was utilized in this study to assess the level of coping strategies employed by participants. It consists of 66 questions related to coping with stressful situations, rated on a four-point Likert scale from 0 ("Does not apply or not used") to 3 ("Used a great deal"). The questionnaire includes eight subscales: The questionnaire includes eight subscales: confrontive coping (six questions), distancing (six questions), self-controlling (seven questions), seeking social support (six questions), accepting responsibility (four questions), escape avoidance (eight questions), problem-solving (six questions), and positive reappraisal (seven questions). Each subscale's score reflects the frequency of using that particular coping strategy, with higher scores indicating greater utilization. Additional questions serve as distractors. The internal consistency (Cronbach's alpha) of this tool was 0.85, as confirmed by a study.^[13] Tool (II), the Zarit Burden Inventory (ZBI), was developed by authors,^[14] and it was used to assess the level of burden among elderly patients' caregivers. It consists of 22 items rated on a 4-point Likert Scale, ranging from 0 for "never" to 4 for "nearly always."

Total scores were categorized as follows: 0–21 for little or no burden, 21–40 for mild to moderate burden, 41–60 for moderate to severe burden, and 61–88 for severe burden. Higher scores indicate a higher burden. The content validity of the research instrument was established by consulting field experts and senior researchers. A panel of five faculty members reviewed the tools and confirmed their validity. The Cronbach's alpha values for caregivers' knowledge and practice were 0.84 and 0.87, respectively, while for the ZBI scale, it was 0.93. A pilot study involving 10% of the sample size, consisting of caregivers of immobilized elderly patients in Najran and Damanhour cities, was conducted to evaluate the questionnaire's content and time requirements for data collection. Participants in the pilot trial were subsequently excluded from the main study. Before data collection, researchers explained the study's aim to participants, ensuring the confidentiality of their information. Data collection commenced after obtaining informed consent. All collected data underwent thorough review for completeness, consistency, and accuracy. The authors used descriptive statistics (mean, frequencies, and standard deviation) and inferential statistics (Chi-square, *t*-test, Pearson correlation, Spearman correlation) to analyze the data and present the study results.

Ethical considerations

The study was conducted with careful attention to ethical research standards and participants' rights. Ethical clearance was obtained from the Ethical Research Committee at the faculty of nursing, Damanhour University (No. 59 d/18/8/2022). Caregivers were informed about the nature of the study, its aim, benefits, tools, and the collection process. They were assured of their right to refuse participation. Strict confidentiality measures were implemented to safeguard participants' information throughout the study.

Results

In Najran City, 78.80% of the caregivers were male compared to 32.70% in Damanhour City ($X^2 = 22.40$, $df = 1$, $p < 0.001$). Regarding educational level and marital status, there were no significant differences between the two groups ($X^2 = 1.60$, $df = 2$, $p = 0.40$), ($X^2 = 5.70$, $df = 2$, $p = 0.05$), respectively. 25% of caregivers in Najran City were nurses with university certificates compared to 28.80% in Damanhour City. The results also reveal that 80.80% of the caregivers in Najran City report enough income, and 75% reported the availability of healthcare services, compared to 26.90% and 36.50% in Damanhour City, indicating significant differences between groups ($X^2 = 30.30$, $df = 1$, $p < 0.001$) and ($X^2 = 14.10$, $df = 1$, $p < 0.001$), respectively. Furthermore, there were significant differences between the two groups regarding the presence of additional caregivers ($X^2 = 15.50$, $df = 1$, $p < 0.001$) [Table 1].

Table 2 shows that 57.70% of caregivers in Najran City have a mild degree of burden compared to 30.80% in

Damanhour City, indicating a significant difference in the total level of burden between the two groups ($X^2 = 7.90$, $df = 2$, $p = 0.01$). On the other hand, there were no statistically significant differences in burden between nurses with university certificates and informal caregivers in Najran and Damanhour cities. The mean score for using the coping mechanism among caregivers in Najran City was significantly higher than the mean among caregivers in Damanhour City ($t_{102} = 3.90$, $p < 0.001$). On the other hand, there were no significant differences in using coping mechanisms between nurses with university certificates and informal caregivers in Najran and Damanhour cities. There were significant differences in the total levels of knowledge ($X^2 = 6.90$, $df = 2$, $p = 0.03$) between the studied caregivers in Najran and Damanhour Cities but no significant differences in total levels of practice ($X^2 = 3.10$, $df = 1$, $p = 0.07$). Furthermore, there were significant differences in the level of knowledge and practice between nurses with university certificates and informal caregivers in Najran and Damanhour cities. Table 3 shows that the duration of providing care significantly influenced the total level of burden, the total level of practice, the coping mechanism, the income, the availability of healthcare, and the presence of additional caregivers, with all *p* values < 0.05 among the two groups.

Discussion

Caring for elderly patients can significantly affect caregivers' lives, both objectively and subjectively. The level of burden experienced by caregivers is influenced by various factors, including characteristics of the national health system, culture, patient characteristics, and the caregivers' ability to employ coping mechanisms.^[15] In the current study, results indicated that approximately two-thirds of the studied caregivers in Najran City experienced a mild level of burden, while a similar proportion of caregivers in Damanhour City reported a moderate to severe level of burden. The current study supported a previous study,^[16] which also reported that more than half of the caregivers in Damanhour City experienced a moderate to severe level of burden. Along the same line, a study^[17] reported distinct levels of burden among Egyptian caregivers. In Saudi Arabia, previous studies^[18,19] supported the findings of the current study, indicating that approximately half of the caregivers experienced low-to-mild burden. The levels of burden among caregivers in Damanhour were significantly higher compared to those in Najran, possibly due to a higher proportion of female caregivers without additional support. The current study also revealed that caregivers in Najran city had a significantly higher mean score of using coping mechanisms (120.50) compared to caregivers in Damanhour city (101.50, $p < 0.001$). The findings of the present study align with Elkafrawy and his colleagues' research, which reported the mean score of using coping mechanisms among Egyptian caregivers was 25.40 points below the maximum score.^[20] On

Table 1: Demographic characteristics of caregivers at Najran City (52) and caregivers at Damanhour City (52) (n=104)

Items	Najran city n (%)	Damanhour city n (%)	χ^2	df	p
Gender					
Male	41 (78.80%)	17 (32.70%)	22.40	1	<0.001*
Female	11 (21.20%)	35 (67.30%)			
Education					
Read and write	18 (34.70%)	12 (23.10%)	1.60	2	0.40
Secondary education	21 (40.30%)	25 (48.10%)			
University education	13 (25%)	15 (28.80%)			
Marital status					
Married	35 (67.30%)	38 (73.10%)	5.70	2	0.05
Single	5 (9.60%)	10 (19.20%)			
Divorced	12 (23.10%)	4 (7.70%)			
Income					
Enough	42 (80.80%)	14 (26.90%)	30.30	1	<0.001*
Not enough	10 (19.20%)	38 (73.10%)			
Additional caregiver					
Yes	39 (75%)	20 (38.40%)	14.10	1	<0.001*
No	13 (25%)	32 (61.60%)			
Duration of being the caregiver					
1-2	22 (42.30%)	25 (48.10%)	1.70	2	0.40
3-5	13 (25%)	16 (30.80%)			
>5	17 (32.70%)	11 (21.20%)			
Availability of healthcare					
Yes	39 (75%)	19 (36.50%)	15.50	1	<0.001*
No	13 (25%)	33 (63.50%)			

χ^2 =Chi-Square test. *Significant at $p \leq 0.05$

Table 2: Comparison of burden, coping, knowledge, and practice between groups (n=104)

Items	Najran city n (%)	Damanhour city n (%)	χ^2	df	p
Burden					
Mild	30 (57.70%)	16 (30.80%)	*7.90	2	0.01*
Moderate	14 (26.90%)	20 (38.40%)			
Severe	8 (15.40%)	16 (30.80%)			
Coping mechanisms	120.50 (32.30)	10.05 (25.40)	**3.90	102	<0.001*
Knowledge					
Satisfactory	14 (26.90%)	21 (40.40%)	*6.90	2	0.03*
Average	12 (23.10%)	18 (34.60%)			
Poor	26 (50%)	13 (25%)			
Practice					
Competent	18 (34.60%)	27 (51.90%)	*3.10	1	0.07
Incompetent	34 (65.40%)	25 (48.10%)			

* χ^2 =Chi-Square test. ** $t=t$ -test, SD=Standard Deviation. *Significant at $p \leq 0.05$

the other hand, this result contrasts with previous studies,^[21-24] suggesting that elderly caregivers in Saudi Arabia exhibit low levels of coping mechanisms. A possible explanation for the result of this study is that the majority of caregivers in Najran City were male, had sufficient income, and had additional caregiver support. The total level of burden was significantly influenced by various factors, including the duration of providing the care, the total level of practice,

coping mechanism, income, availability of health care, and presence of additional caregivers, $p < 0.05$, among both groups. The results of the current study were in harmony with previous studies.^[17,19,24,25] Although there were no significant differences in the burden between nurses with university certificates and informal caregivers, it is noteworthy that the burden was significantly correlated with the level of practice, and nurses with university certificates demonstrated

Table 3: Correlation between the duration of providing the care, knowledge, and practice score of caregivers' burden score

Items	Najran caregiver		Damanhour caregivers	
	<i>R</i>	<i>p</i>	<i>R</i>	<i>p</i>
Duration of providing the care	0.83	<0.001	0.86	<0.001
Knowledge	-0.48	0.06	-0.39	0.08
Practice	-0.69	<0.001	-0.76	<0.001
Coping mechanism	-0.64	<0.001	-0.71	<0.001
Items	<i>R</i>	<i>p</i>	<i>R</i>	<i>p</i>
	spearman		spearman	
Income	-0.71	0.003	-0.72	<0.001
Availability of healthcare	-0.86	<0.001	-0.69	<0.001
Additional caregiver	-0.73	<0.001	-0.71	<0.001

significantly higher levels of practice than informal nurses. Therefore, it is recommended to integrate and emphasize the role of nurses with university certificates in the treatment plan of immobilized elderly patients. Although the study has a strong implication for practice, research, administration, and education, it is important to acknowledge its limitations. One limitation of this study is the use of the convenience sampling technique, which threatens the internal validity of the findings. Additionally, the study was conducted in only one city per country, limiting its generalizability. Future studies should consider a larger sample size that includes multiple cities and countries to enhance the generalizability of the data. Last, the reliance on self-reported data is another limitation as it introduces the risk of bias.

Conclusion

The findings of the current study illustrated that the levels of burden among elderly caregivers in Najran City were significantly lower than the levels of burden among caregivers in Damanhour City ($p < 0.001$). Additionally, the mean score for using the coping mechanism among caregivers in Najran city was significantly higher than the mean among caregivers in Damanhour city, although both groups' mean scores were considered low. Furthermore, the total level of burden was significantly influenced by various factors, including the duration of care provision, the total level of practice, coping mechanism, income, availability of health care, and the presence of additional caregivers, $p < 0.05$, among both groups. Based on the findings of this study, policymakers need to focus on the importance of integrating topics related to coping mechanisms in education and practice. This would assist nurses and caregivers in effectively managing the burdens associated with caring for dependent patients.

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Conflicts of interest

Nothing to declare.

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