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REVIEW ARTICLE

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A systematic review of caregivers' knowledge and related factors towards pressure ulcer prevention

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Abstract

This systematic review aimed to examine the knowledge of caregivers regarding pressure ulcer (PU) prevention. A thorough, methodical search was conducted from the earliest date to February 1, 2023 using keywords extracted from Medical Subject Headings such as "Caregivers", "Knowledge", and "Pressure ulcer" in various international electronic databases such as Scopus, PubMed, Web of Science, and Persian electronic databases such as Iranmedex and Scientific Information Database. The quality of the studies included in this systematic review was evaluated using an appraisal tool for cross-sectional studies (AXIS tool). In total, 927 caregivers participated in the eight studies. The average age of the participants was 40.50 (SD = 12.67). Among the participants, 61.87% were women. The average caregiver's knowledge of PU prevention was 53.70 (SD = 14.09) out of 100, which suggests a moderate level of knowledge. Factors such as level of education, age, occupation, information about PUs, attitude, and practice had a significant positive relationship with caregivers' knowledge related to the prevention of PUs. Knowledge had a significantly negative relationship with age. In addition, marital status, type of relationship, age, gender, occupation, level of education, and inpatient wards had a significant relationship with caregivers' knowledge regarding PUs prevention. Therefore, managers and policymakers in the medical field can help increase caregivers' knowledge by providing an online or in-person educational platform relevant to PU prevention.

KEYWORDS

caregivers, knowledge, pressure sore, pressure ulcer, systematic review

Key Messages

- the average caregiver's knowledge of PU prevention was 53.70 (SD = 14.09) out of 100, which suggests a moderate level of knowledge

- factors such as level of education, age, occupation, informed about PUs, attitude, and practice have a significant positive relationship with caregivers' knowledge related to the prevention of PUs
- knowledge had a significant negative relationship with age
- in addition, the factors of marital status, type of relationship, age, gender, occupation, level of education, and inpatient wards had a significant relationship with caregivers' knowledge regarding PUs prevention
- therefore, managers and policymakers in the medical field can help to increase caregivers' knowledge by providing an online or in-person educational platform relevant to the prevention of PU

1 | INTRODUCTION

A pressure ulcer (PU) is defined as an injury to a point on the skin or its underlying tissue that is usually located on a bone or its protrusion and is caused by pressure or pressure in combination with a cut.[1-8] This complication is a fundamental health concern in people who have problems moving and changing their position in any way and cannot do this easily. For example, in patients with fractures or those who receive palliative care, difficulty in changing positions is seen.[9,10] On the other hand, because of their clinical condition and reduced activity, the possibility of PUs increases, and with the progress of PUs, their immobility will worsen.[11] Other factors that can affect the occurrence of PUs include improper nutrition, weak sensation, urinary and faecal incontinence, and poor overall physical and mental health.[12]

PUs are associated with quality of life, patient performance, mortality, and health care costs. For example, PU can reduce a patient's quality of life and performance.[13] In addition, it takes a long time to heal and care for people who are prone to PUs, such as those receiving palliative care. In this regard, the necessary care of these patients, in addition to nurses, can be the responsibility of caregivers after discharge.[14] The fact that home care can be provided by family caregivers encourages nurses to put more emphasis on family education because caregivers play a key role in preventing PUs.[15] If caregivers have sufficient knowledge and awareness about PU prevention, they can help patients achieve the best quality of life. Therefore, this knowledge is an essential requirement for caregivers.[16] A study in India found that half of the caregivers had poor knowledge of PU prevention[17]; another study reported in Jordan showed that most caregivers had a relatively low level of knowledge about PU prevention.[18]

2 | RESEARCH QUESTIONS

- What is the mean score for caregivers' knowledge of PU prevention?
- What factors are associated with caregivers' knowledge of PU prevention?

2.1 | Aim

Therefore, it is necessary to consider the importance of preventing PUs in patients and the importance of knowing this issue in caregivers. The absence of a review study the present review study was conducted to investigate the knowledge of caregivers in the prevention of PUs.

3 | METHODS

3.1 | Review protocol

This systematic review was performed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.[19] Moreover, the International Prospective Register of Systematic Reviews (PROSPERO) database did not include this review.

3.2 | Search strategy

A thorough, methodical search was conducted from the earliest date to February 1, 2023 using keywords extracted from Medical Subject Headings such as "Caregivers", "Knowledge", and "Pressure ulcer" in various international electronic databases such as Scopus, PubMed, Web of Science, and Persian electronic databases such as Iranmedex and Scientific Information Database. For example, the search strategy was in PubMed/MEDLINE

database including ((“Knowledge”) OR (“Awareness”) OR (“Knowing”)) AND ((“Caregivers”) OR (“Carer”) OR (“Family)) AND ((“Pressure ulcer”) OR (“Pressure injury”) OR (“Pressure sore”) OR (“Bedsore”)) AND (“Prevention”). To combine phrases, the Boolean operators “OR” and “AND” were used. Persian equivalents of Iranian electronic databases were also searched. Two researchers searched independently and examined the study. Grey literature, which includes expert commentary, conference presentations, theses, research and committee reports, and continuing research, was not included in this systematic review. Grey literature is writing that has not received the publisher's clearance for commercial publication, whether it is published in print or electronically.[20]

3.3 | Inclusion and exclusion criteria

This systematic review examined cross-sectional studies on carers' knowledge of PU prevention that were written in both English and Persian, and published in both languages. Reviews, case studies, conference proceedings, letters to the editor, experimental studies, and research with qualitative designs were excluded.

3.4 | Study selection

EndNote 20 was used as the data management application in this systematic review. The following processes were used to select studies based on the inclusion/exclusion criteria: (1) remove duplicate articles manually and then electronically, (2) assess the study's title and abstract; and (3) evaluate the papers' full texts. During the selection of studies, a third researcher overcame the disagreement between the first two. Finally, the references were thoroughly examined to avoid data loss.

3.5 | Data extraction and quality assessment

The name of the first author, year of publication, location, sample size, gender, age, marital status, level of education, occupation status, questionnaire, and key results are some of the details that the researchers retrieved for this review. The appraisal tool for cross-sectional studies (AXIS tool) evaluates the quality of the included studies using 20 items with a two-point Likert scale, including yes (score of 1) and no (score of 0). This tool assesses report quality (7 items), study design quality (7 items), and the possible introduction of biases (6 items). Finally, AXIS rates the quality of studies at three levels: high (70%-100%), fair (60%-69.9%), and low (0%-59.9%).[21] Two researchers independently extracted and assessed the quality of the data.

4 | RESULTS

4.1 | Study selection

As shown in Figure 1, 2023 studies were found after an extensive search of internet resources. A total of 523 articles were removed from the research because they

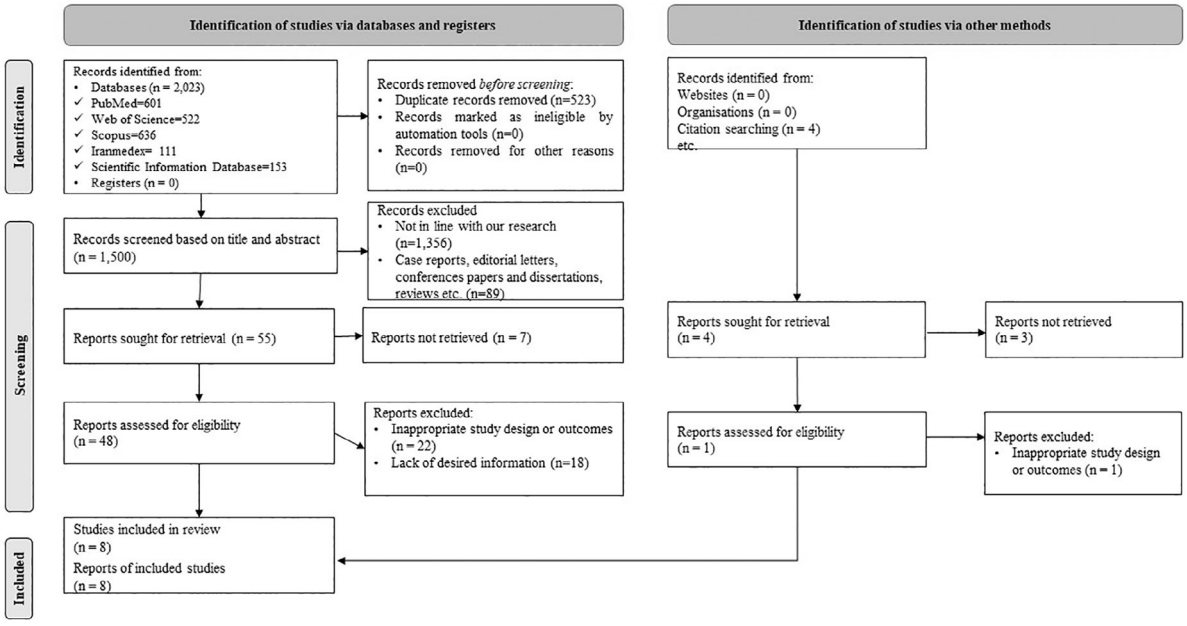

FIGURE 1 Flow diagram of the study selection process.

TABLE 1 Basic characteristics of the included studies in this systematic review.

First Author/year	Location	Sample size	M/F ratio (%)	Age (mean ± SD)	Single/Married ratio (%)	Level of education (%)	Occupation (%)	Questionnaire	Key results	AXIS Score
Sharma et al.,[26]	India	42	52.38/47.62	N/A	30.95/69.05	N/A	N/A	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 26.46.	High
Mersal,[23]	Egypt	30	60.00/40.00	N/A	43.33/56.67	• Illiterate: 20.00 • Under diploma: 46.67 • Diploma or above: 33.33	• Employed:53.33 • Unemployed:46.67	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 36.67. • There was a significant positive relationship between age and knowledge ($P < 0.004$). • There was a significant positive relationship between occupation and knowledge ($P < 0.001$). • There was a significant positive relationship between the level of education and knowledge ($P < 0.001$). • There was a significant relationship between gender and knowledge ($P < 0.002$). • There was a significant relationship between marital status and knowledge ($P < 0.001$). • There was a significant relationship between the type of relation and knowledge ($P < 0.017$).	High
Poudyal et al.,[25]	Nepal	133	56.39/43.61	35.90 (SD = 13.50)	15.79/84.21	• Illiterate: 29.32 • Under diploma: 54.88 • Diploma or above: 15.80	N/A	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 6.69 (SD = 3.06). • There was a significant positive relationship between the level of education and knowledge ($P = 0.001$). • There was a significant relationship between marital status and knowledge ($P = 0.020$).	High
Nogueira et al.,[24]	Brazil	47	10.94/89.36	41.60	N/A	• Under diploma: 55.32 • Diploma or above: 44.68	N/A	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 67.80 (SD = 14.80). • There was a significant negative relationship between age and knowledge ($P < 0.05$).	High
Karakaya et al.,[14]	Turkey	109	31.19/68.81	49.40 (SD = 10.90)	N/A	• Illiterate: 2.75% • Under diploma: 46.79% • Diploma or above: 50.46	N/A	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 70.10 (SD = 18.50). • There was a significant positive relationship between informed about PUs and knowledge ($P = 0.019$)	High

(Continues)

TABLE 1 (Continued)

First Author/year	Location	Sample size	M/F ratio (%)	Age (mean ± SD)	Single/Married ratio (%)	Level of education (%)	Occupation (%)	Questionnaire	Key results	AXIS Score
Jafari et al.,[22]	Iran	323	45.51/54.49	35.10 (SD = 13.60)	N/A	• Under diploma: 27.24 • Diploma or above: 72.76	N/A	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 34.50 (SD = 3.40). • There was a significant positive relationship between the level of education and knowledge ($P < 0.001$). • There was a significant negative relationship between age and knowledge (r = −0.239, $P < 0.001$). • There was a significant relationship between the type of relation and knowledge ($P < 0.001$). • There was a significant relationship between inpatient wards and knowledge ($P < 0.001$).	High
Tharu et al.,[27]	Bangladesh	127	23.62/76.38	N/A	13.39/86.61	• Illiterate:37.01 • Under diploma: 25.20 • Diploma or above: 37.79	• Housewife: 69.29 • Agriculture: 10.24 • Service: 6.30 • Business: 1.57 • Student: 6.30 • Factory worker: 3.15 • Others: 3.15	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 73.68 (SD = 6.43). • There was a significant positive relationship between attitude and knowledge (r = 0.30, $P < 0.01$). • There was a significant positive relationship between practice and knowledge (r = 0.37, $P < 0.01$). • There was a significant relationship between age and knowledge ($P < 0.001$). • There was a significant relationship between the level of education and knowledge ($P < 0.001$). • There was a significant relationship between the type of relation and knowledge ($P < 0.01$).	High
BaniHani et al.,[18]	Jordan	146	25.34/74.66	N/A	81.51/18.49	• Under diploma: 7.54 • Diploma or above: 92.46	• Employed: 70.55 • Unemployed: 29.45	Researcher made questionnaire	The mean score of caregivers' knowledge about PU prevention was 40.50 (SD = 23.40). • There was a significant positive relationship between age and knowledge ($P = 0.001$). • There was a significant relationship between marital status and knowledge ($P = 0.001$). • There was a significant relationship between occupation status and knowledge ($P = 0.001$).	High

Abbreviations: PU, pressure ulcer, SD, standard deviation.

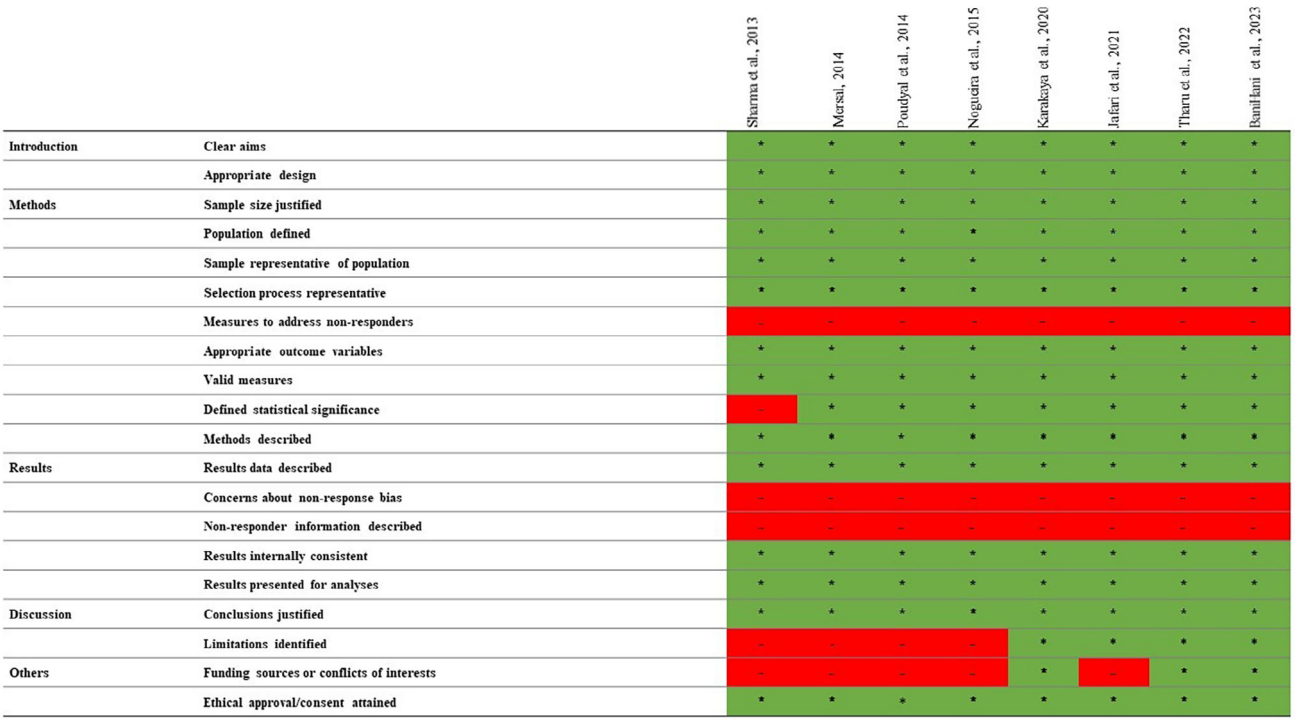

FIGURE 2 Assessment of the quality of the included articles.

included duplicate content. A total of 1356 publications from the remaining 1500 papers were excluded from this systematic review because they did not contribute to the goal of the study, and 89 studies were excluded because they were not cross-sectional. Following a careful examination of the full texts of the publications, 22 studies were disregarded because of insufficient techniques or results, and 18 studies were disregarded because of a lack of data. Eight studies[14,18,22-27] were ultimately included in this systematic review.

4.2 | Study characteristics

As mentioned in Table 1, 927 caregivers participated in eight studies.[14,18,22-27] The average age of the participants was 40.50 (SD = 12.67). Among the participants, 61.87% were women and 49.61% had a diploma or higher.

4.3 | Methodological quality of included study

As shown in Figure 2, all the studies[14,18,22-27] were of high quality. In addition, four studies[23-26] failed to disclose the limitations of the study, and five studies[22-26] failed to disclose funding sources or conflicts of interest.

4.4 | Caregivers' knowledge about the prevention of PUs

As shown in Table 1, the average caregiver's knowledge of PU prevention was 53.70 (SD = 14.09) out of 100, which suggests a moderate level of knowledge.

4.5 | Factors associated with caregivers' knowledge about the prevention of PUs

As shown in Table 1, factors such as level of education,[22,23,25] age,[18,23] occupation,[23] informed about PUs,[14] attitude,[27] and practice[27] have a significant positive relationship with caregivers' knowledge related to the prevention of PUs. Knowledge had a significant negative relationship with age.[22,24] In addition, the factors of marital status,[18,23,25] type of relationship,[22,23,27] age,[27] gender,[23] occupation,[18] level of education,[27] and inpatient wards[22] had a significant relationship with caregivers' knowledge regarding PUs prevention.

5 | DISCUSSION

According to the findings of this systematic review, which included 927 caregivers from eight studies, they have a moderate level of knowledge about PU prevention. The factors related to caregivers' knowledge of PU

prevention include the level of education, age, occupation, information about PUs, attitude, practice, marital status, type of relationship, gender, and inpatient wards.

Given the problems and effects of PUs, their prevention is crucial. Moreover, preventing PUs is less expensive than long-term treatment.[28] Preventive and therapeutic measures are frequently implemented by patients and their caregivers in the management of PUs, particularly at home.[29] Therefore, patient caregivers must have a thorough understanding of PU prevention. The results of this systematic review showed that the level of caregivers' knowledge of PU prevention is moderate. However, these findings vary. The elements impacting caregivers' knowledge may be the cause of this variation. According to the findings of a study conducted in Egypt, caregivers do not have a sufficient level of knowledge on the prevention of PU.[23] However, the findings of a study conducted in Bangladesh indicated that caregivers' knowledge of PU prevention is at an acceptable level.[27]

Age is one factor that influences caregivers' knowledge about PU prevention. According to a Jordanian study, age and expanding knowledge are directly related.[18] The age of caregivers and their knowledge of PU prevention, however, are significantly inversely correlated according to a study conducted in Iran.[22] The educational and cultural conditions in various nations may be the cause of this discrepancy in the outcomes.

Education level played a role in caregivers' knowledge of PU prevention as well. Three research conducted in Iran, Nepal, and Egypt showed that caregivers' knowledge of PU prevention rises with higher educational attainment.[22,23,25] This association may result from educated individuals' higher capacity to access knowledge from a variety of sources.

The caregivers' marital status was another factor that affected their level of knowledge of caregivers on PU prevention. Studies conducted in Egypt and Jordan showed that married caregivers are more knowledgeable about PU avoidance than unmarried individuals.[18,23] This factor may result from the fact that the majority of single individuals are younger and engaged in higher education; this issue may account for why single people have less knowledge than married people.

6 | LIMITATIONS

This systematic review was not without its limitations, just as any other systematic review. In this systematic review, a meta-analysis could not be performed. There is a risk of less precise data analysis and inconsistent results if there are no meta-analyses. Even though there were not any meta-analyses in this study, data collection, organisation, and analysis were methodical. The database search probably did not find all studies on this topic. As a final note, this systematic review only included English and Persian-language studies; other languages probably were not included.

6.1 | Implications for health care managers and policymakers

This study's findings indicate that caregivers' knowledge of PU prevention is particularly crucial. By providing an online or in-person educational platform relevant to the prevention of PU, managers, and policymakers in the health care field can aid in improving the knowledge of caregivers.

6.2 | Implication for future research

Future research should, it is recommended, focus further on the factors impacting caregivers' knowledge of PU prevention. Furthermore, interventional research should be carried out in conjunction with efficient teaching strategies to improve caregivers' understanding of PU prevention.

7 | CONCLUSION

In summary, according to the findings of this systematic review, which included 927 caregivers from eight studies, they have a moderate level of knowledge about PU prevention. The factors related to caregivers' knowledge of PU prevention include the level of education, age, occupation, information about PUs, attitude, practice, marital status, type of relationship, gender, and inpatient wards. Therefore, managers and policymakers in the medical field can help to increase caregivers' knowledge by providing an online or in-person educational platform relevant to the prevention of PU.

AUTHOR CONTRIBUTIONS

All authors: idea for the review, study selection, data extraction, interpretation of results, writing of the manuscript. All authors read and approved the final manuscript.

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There was no source of funding for this systematic review study.

CONFLICT OF INTEREST STATEMENT

We do not have potential conflicts of interest with respect to the research, authorship, and publication of this article.

DATA AVAILABILITY STATEMENT

The datasets used during the current study are available from the corresponding author on request.

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