Clinical and Experimental Health Sciences

Use of Q Methodology In Nursing Care: A Scoping Review

Rukiye Çelik[1], Emine Güneş San[2], Naime Altay[1]

[1] Gazi University, Faculty of Nursing, Department of Nursing, Ankara, Türkiye.
[2] Bartın University, Faculty of Health Sciences, Department of Nursing, Bartın, Türkiye.

Correspondence Author: Rukiye Celik
E-mail: rukiyecelik@gazi.edu.tr
Received: September 3, 2024 **Accepted:** September 6, 2025

ABSTRACT

Objective: This review aims to assess the current literature on the research of Q methodology within nursing care.

Design: This is a scoping review of the literature utilizing the updated Levac et al framework.

Methods: A search of the PubMed, Web of Science Core Collection, MEDLINE, Scopus, Science Direct, and Google Scholar databases was conducted for peer-reviewed, English research published between 2017 and 2022. A comprehensive search of English language journal articles was conducted for Q methodology studies published between 2017 – 2022 that used nursing care. Data were extracted using a modified version of the Assessment Review Instrument for Q Methodology.

Results: The search retrieved a total of 1339 articles. Twenty articles met the criteria for inclusion in this study. While 12 of the included studies evaluated nurses' perceptions, attitudes, and behaviors towards care, 7 articles examined the patient's subjective perception and experience of care. In one study, the perceptions of both the patients and the nurses were reported together. It was determined that all of the studies included in the scoping review were in adult patients, and most of them were for patient-centered care.

Conclusion: There is limited research on the use of Q methodology in nursing. Using of Q methodology in nursing practice can help to identify different perspectives. Thus, it can be possible to provide patient-centered care. Moreover, Q methodology is a user-friendly approach as it does not require a large sample size. The use of the Q methodology can be an advantage in providing a more holistic and innovative view of the need for long-term care. Effective identification of emotions, perceptions, and attitudes can be a guide to the planning and delivery of appropriate nursing care. Additionally, this study enhances nurses' awareness of Q methodology and guides designing studies using this approach.

Keywords: Q methodology; Q-Sort; nursing; nursing care; scoping review

1. INTRODUCTION

The Q methodology was first described by William Stephenson in 1935 as an alternative approach to factor analysis in which participants are correlated with each other to find groups of shared views (1). With this method, researchers can identify the perspectives of participants, the differences and similarities among them, and the order of priority among them (1,2). This research approach includes statistical methods with intertwined qualitative and quantitative steps (3). It is essential to understand the seven stages that highlight all the processes in order to understand the Q methodology. The process includes identifying and building a topic, developing a Q-set, piloting the study, selecting participants, conducting Q-sorting, performing quantitative analyses, and finally interpreting qualitative factors. First step involves collecting the perspectives and opinions of individuals related to the subject. This stage begins with creating a pool of information on the subject (4). The next step is to develop a Q-set by collecting different ideas, concepts, or statements about the topic until saturation is reached. The most appropriate expressions are selected from the pool to create the set (5,6). The comprehensibility, usability, and applicability of the developed Q-set as well as the impressions of the participants evaluate during the pilot phase. Participants are randomly selected, and studies usually have 40-60 samples (4). During the Q-sorting phase, participants are instructed to sort cards containing expressions. Before the sorting process, participants are given instructions and asked to read the cards and arrange the statements accordingly. The data is then divided into three categories: 'very important', 'neutral', and 'not important', or 'most as I think', 'neutral', and 'least as I think'. Cards are sorted into categories and placed in order of priority within each category. The card placement process follows a predetermined shape (see Figure 1). After sorting the cards, participants are asked questions about their background and experience with the expressions and their rankings. This stage constitutes the qualitative part of the method (6,7).

How to cite this article: Celik R, San Günes E, Altay N. Use of Q Methodology In Nursing Care: A Scoping Review. Clin Exp Health Sci 2025; 15: 735-747. https://doi.org/10.33808/clinexphealthsci.1542738

Copyright © 2025 Marmara University Press

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

Following this stage, specially designed software is utilized to conduct Q-factor analysis of the resulting data. The software initially analyses the correlation between a participant's Q-sort. This produces a matrix of correlation coefficients that indicates the degree of similarity or dissimilarity between each Q-sort pair. Correlation coefficients can be interpreted as the degree of similarity or difference between participants' perspectives in a Q-sort, which is considered an indicator of a person's subjectivity regarding the research topic (7).

After completing the Q sort, a person factor analysis is conducted to identify clusters of participants who have similarly completed their Q sorts. This reveals a set of shared viewpoints. After analyzing the data, expressions that show consensus and distinctiveness are identified (5).

1.1. Background

Q-methodology is a mixed method. It combines qualitative and quantitative techniques to study subjectivity (8). Considering the nature of nursing discipline, Q-methodology is accepted as a methodological approach to the research of human subjectivity such as attitudes, perceptions, feelings, values, experiences, and needs (1,4). It can also provide a basic understanding for the nursing discipline that has adopted person-centered care (9). Despite having been developed in the early twentieth century, it is not widely used in nursing. A recent scoping review showed that the number of healthcare research studies using the Q methodology has increased over the past 5 years (4). The literature indicates that the Q methodology is used in areas such as clinical care, research, and nursing education (2,10,11). It is important to comprehensively evaluate the studies in which the method is used to determine the framework. In this context, scoping reviews can be an ideal way to examine the emerging body of evidence and to determine the breadth and depth of a particular topic (12).

The aim is to systematically examine the characteristics of studies using the Q methodology in nursing care, using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews [PRISMA-ScR] in scoping studies (Appendix 1).

The research questions for this review were as follows:

1. What are the areas of nursing care that are addressed in studies using the Q Method?
2. How to apply Q methodology in nursing care research (i.e., details of the methods).
3. What are the results of the studies that have used the Q methodology?

2. METHODS

The first phase of the search strategy involves searching the databases PubMed, MEDLINE, Web of Science Core Collection, Scopus, Science Direct, and Google Scholar using MESH keywords. All databases use terms similar to the following: q-sort*, nurs*, nursing, nursing care. A detailed search strategy for each database is presented in Appendix 2.

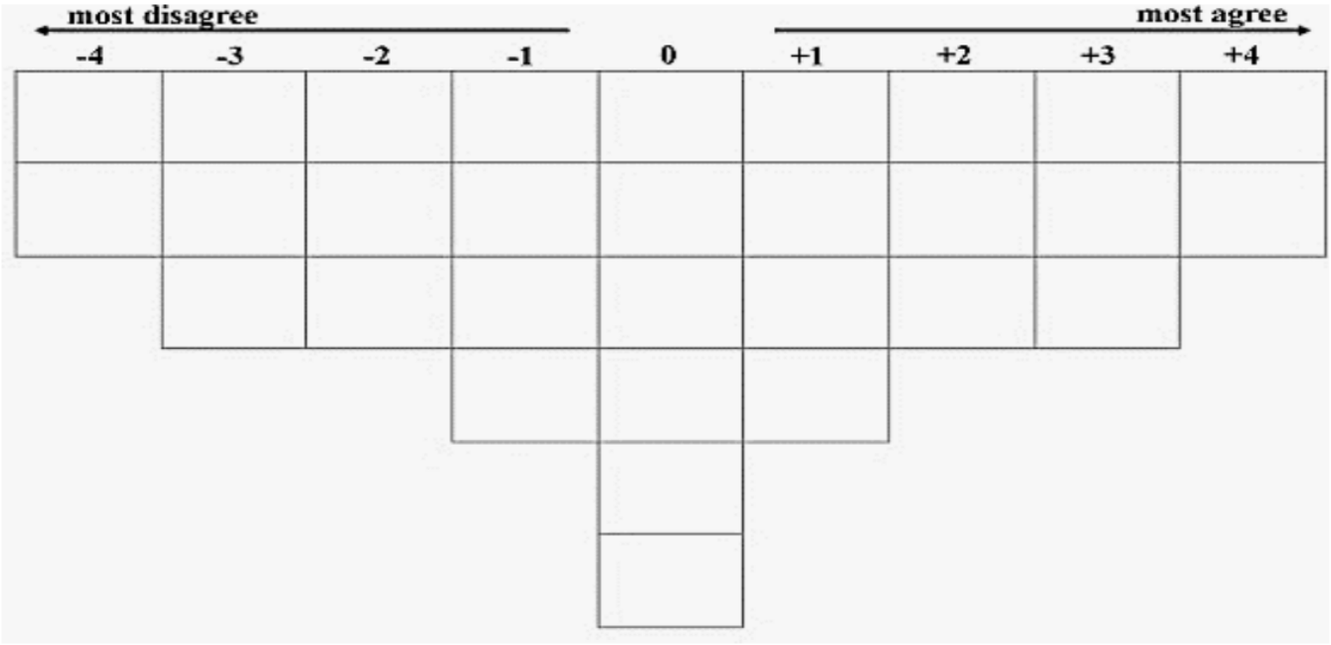

Figure 1. *Example of Q Grid*

Two researchers were involved in the review, selection, and analysis of the articles. The first and second researchers scanned the title, abstract, and keywords in the first stage. The two researchers first selected the relevant articles by reading the abstracts independently according to the inclusion and exclusion criteria. Then, two researchers read the full text and determined the studies to be included in the review. The search strategies for the full data are shown in Table 1. Both researchers conducted searches independently and their results were compared to reach a consensus on the overall results across all databases.

Table 1. *Search Strategies*

Databases searched	PubMed, MEDLINE, Web of Science Core Collection, Scopus, Science Direct and Google Scholar
Search string (consistent across databases)	((“q-sort” OR “q sort” OR “q-method*” OR “q method*”) AND (“nursing care” OR “care” OR “nurs*”))
Limiters	Date (2017–2022), Language (English)

Data were extracted using the Evaluation and Review Tool (ARIQ) for Q methodology developed by Dziopa and Ahern (13), which was converted into an Excel spreadsheet. ARIQ is designed as a review tool to be used by reviewers and includes general information about the study, the purpose of the study, the development and design of the Q-rank, the population, the statistical analysis, and the results of the study. This tool was developed as a result of a systematic review that examined 14 studies using the Q methodology method, which met the inclusion criteria and were published in January and December 2008.

2.1. Selection Criteria

The study selection process began with the definition of inclusion and exclusion criteria. The inclusion criteria were: studies published in peer-reviewed scientific journals, studies published in the English language, studies published between January 2017 and December 2022, studies on Q methodology, and studies on nurses who use Q methodology to determine care needs. Exclusion criteria were applied to studies. Studies were excluded if they were letters, book reviews, commentaries, editorials, or unpublished papers, focused on subjects other than nurses, such as other health professionals, or did not use Q methodology.

In the first screening stage, two researchers examined the article titles separately to assess their suitability for the review. Articles that met the review criteria were included in the second stage of screening, in which two researchers independently reviewed the abstract. Articles that met the criteria were independently reviewed by two researchers using ARIQ and data were extracted. The two researchers then convened to determine whether their approach to data abstraction was consistent with the research question and aim. If there was disagreement about inclusion in the study, the third researcher reviewed the relevant studies, and the researchers reached a consensus. All studies were assessed according to the inclusion/exclusion criteria listed below.

2.2. Search Outcomes

All database search results have been imported into Endnote. A total of 1339 studies were reached in the first search, but 361 studies were excluded due to duplication. After scanning titles, abstracts, and keywords, the full texts of 47 potentially relevant studies were reviewed (Figure 2). Finally, the scoping review included 20 studies. The level of agreement between the two independent investigators was close to perfect (14). All studies (n=47) whose full texts were examined are given in Appendix 2.

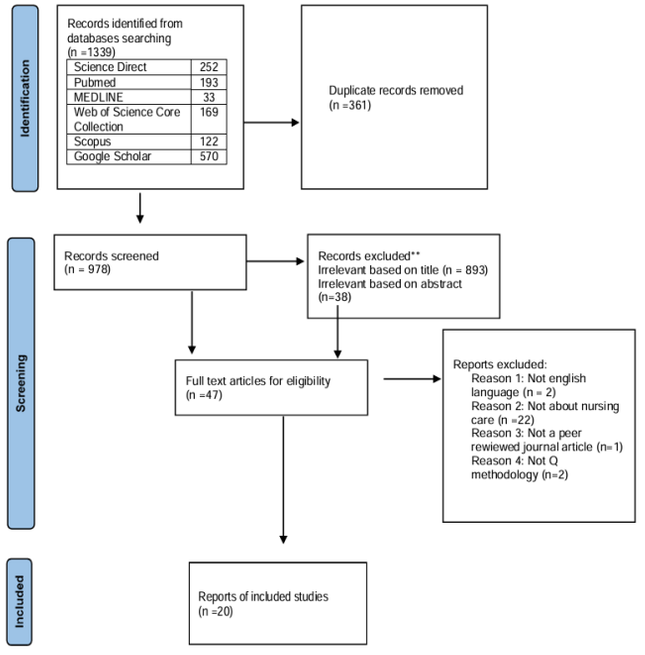

Figure 2. *PRISMA diagram.*

2.3. Quality Appraisal

The included papers were not carried out as it was not considered relevant to the objectives of this review and is not usually required in scoping reviews (15,16). The study design was planned according to the recommendations of Levac et al (16). This Q methodology study was undertaken to fill the knowledge gap in this area and to provide guidance for future studies.

2.4. Data Abstraction and Synthesis

The researchers met to create the datasheet form and determined which variables to look for to answer the research question. Accordingly, they determined the following variables and decided on the characteristics of the data of the study: title, year, journal published, study area, number of q-sets, q-set ordering terms, q-set numerical sorting type, method management style, program used in the method, factor extraction and rotation type, P-sample number, and total variance explained (Table 2). Descriptive statistics were used to summarize research topics, countries of origin, study populations, and publication types.

Table 2. *Methodological variations in included studies*

Author, Year	Journal	Method: number of statements in Q-set	Method: numerical ranking/ likert	Analysis: factor extraction	Analysis: rotation	Analysis: program	Results: deatails of partipiants	Results: number of factors	Results: variance explained
(Jueng et al., 2017)	Asian Nursing Research	44	(-4) to (+4)	PCA	Varimax	PQMethod	60 nurses	5	Not reported
(Kim, 2017).	Korean Journal of Adult Nursing	27	(-4) to (+4)	PCA	Not reported	PC-QUANL	36 nurses	3	Not reported
(Kim, Lee & Chang, 2018).	Nephrology Nursing Journal	53	(-4) to (+4)	Not reported	Not reported	PQMethod	35 patients on haemodialysis	5	60%
(Chen et al., 2018)	Nursing Ethics	40	(-4) to (+4)	PCA	Varimax	PQMethod	60 nurses	5	Not reported
(Galekop et al., 2019)	BMC Palliative Care	35	(+1) to (+9)*	Not reported	Not reported	PQMethod	41 respondents, consisting of 30 professionals and 11 volunteers	2	40%
(Zhu et al., 2019)	Contemporary Nurse	49	(-5) to (+5)	Not reported	Not reported	PQMethod	15 nurses and 15 patients and 15 family caregivers	4	65%
(Lee & Chang, 2019)	Journal of Wound, Ostomy and Continence Nursing	30	(-4) to (+4)	PCA	Varimax	PQMethod	40 patients	4	57%
(Agapie et al., 2019)	AMIA Annual Symposium proceedings	34	(-4) to (+4)	PCA	Varimax	PQMethod	19 caregivers and 28 hospitalized patients	n/a	59% (caregivers) and 45% (patient)
(Wilson et al., 2020).	Journal of Advanced Nursing	49	(-3) to (+3)	Centroid	Varimax	Q Assessor	45 nurses - 3 in aged care, 15 in palliative care, 13 in intensive or critical care, 14 in oncology)	4	50,20%
(Chon et al., 2020).	Nursing & Health Sciences	73	(-4) to (+4)	Not reported	Not reported	PC-QUANL	33 patients with peritoneal dialysis	3	47,40%
(Guptarak et al., 2020)	Journal of Transcultural Nursing	50	Not reported	Not reported	Varimax	PQMethod	60 - 30 clinical nurses and 30 nurses working in academia	3	48%
(Palese et al., 2020)	Journal of nursing management	35	(-3) to (+3)	Not reported	Not reported	Not reported	11 nurse	3	60,79%
(Jones, 2020)	Primary Health Care	25	(-4) to (+4)	Not reported	Not reported	Not reported	29 community nurses	5	Not reported
(Yeun & Jeon, 2020)	Gastroenterology Nursing	37	(-4) to (+4)	PCA	Varimax	PC-QUANL	33 patients with gastric cancer	3	39,40%
(Hestdal & Skorpen, 2020)	Scandinavian Journal of Caring Sciences	40	(-5) to (+5)	PCA	Varimax	PQMethod	5 nurses, 9 patients	3	62%
(Hengeveld et al., 2021).	Journal of Advanced Nursing	72	(+1) to (+11)**	Not reported	Varimax	Ken-Q Analysis Desktop Edition (KADE)	72-registered nurses, policy makers researchers with peer-reviewed publications on FCC, or nationally recognized experts on FCC	2	29%
(Lim et al., 2021)	International Journal of Mental Health Nursing	40	(-4) to (+4)	PCA	Varimax	Not reported	40 nurses	5	66,40%
(Kang et al., 2022)	Journal of Korean Gerontological Nursing,	34	(-1) to (+1)	Not reported	Not reported	PQMethod	30 nurse	3	51%
(Kim, 2022)	Japan Journal of Nursing Science	34	(-4) to (+4)	PCA	Varimax	PQMethod	33 participants	4	63,27%
(Lee & Chang, 2022)	BMC nursing	35	(-4) to (+4)	PCA	Varimax	PQMethod	40 nurses	4	70%

**"least important (+1), "most important (+9)*

*** "least important (+1)", "neutral (+2), (+3), (+4)", "most important (+5)- (+11)", detailed information is attached.*

3. RESULTS

3.1. Characteristics of Included Articles

The research included in the study was published in 19 different journals between 2017 and 2022. The number of samples is shown in Table 2. The included studies were conducted in nine different countries. Nursing studies using the Q methodology were most common in South Korea (Figure 3). A minimum of 11 (17) and a maximum of 72 participants (18) were included in studies involving nursing care using the Q methodology.

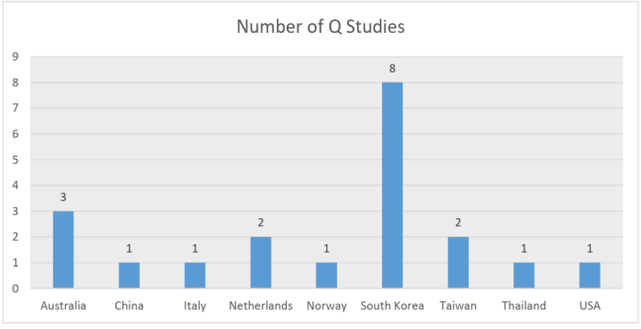

Figure 3. *Distribution of studies by country*

3.2. Topics of Q-studies in Nursing Care

Topics of nursing care were quite diverse. The topics area was grouped under the following headings: evidence-based care (19), patient-centered care (2,17,20-28), family-centered care (18), recovery-oriented care (29), patient self-care (30), preoperative and postoperative care (31,32), and end of life care (11,23). Furthermore, twelve studies examined nurses' perceptions, attitudes, and nursing behaviors (11,17-19,21-24,29,30,33,34). Seven studies focused on patients' subjective perceptions and experiences (2,20,25-28,31). Another study examined the subjective experience of both the patient and the nurse (32).

3.4. Ranking Scales

In Q-ranking, participants in studies followed a specific ranking order (most important, important, least important) and numeric and Likert scales were used together. Cards placed in the same column receive the same score. A person's card rank provides information about that person's perspective. It is important to avoid a ranking where half of the cards are in agreement and half are in disagreement. That's why it's important to keep the column width large when sorting numerically. Participants should be reminded not to concentrate cards in the same column and to sort cards relative to each other. Numerical sorting was used to rank the set of Qs. These orders vary from (-1)-(+1) (18) to (-5)-(+5) (31,32). The most common order is (-4) – (+4) (2,19-21,24-29). One of the studies did not report the numerical scale of the Q-set (Table 2) (22). Card rankings were often given as "strongly agree – strongly disagree" (2,20,26,28,30,31,34). In other studies, the rankings were "least important-most important" (18,19,33), "most agree-least agree" (23,25,27).

3.5. Number of Q statements

The first stage of Q methodology studies is to determine the scope of the work. Once the scope of the study is determined, items/cards are created to reflect all possible views on the topic in a way that meets the scope of the study. For this reason, no average number of cards has been specified for studies using the Q methodology. The number of Q cards varies from study to study and there is no specific guideline. In studies conducted using Q methodology, the number of cards typically ranges from 20 to 50 (7,35,36). The number of Q cards used in the studies varies. It was found that the average number of cards used in the studies was approximately 42, with a minimum of 25 (30) and a maximum of 73 cards (26).

Studies using the Q methodology are generally face-to-face. However, it can be seen that data is also collected by mail or online (Q-assessor, FlashQ, Q-sortware or WebQ). In the studies included in our study, the majority (75%) of the card sorting was done face-to-face and 25% was done via the Internet or e-mail (11,18,19,21,29). HTMLQ (18), e-newsletter (29), and Q-Assessor Program (11) were used in studies conducted via the Internet (Table 2). These programs are designed to meet the needs of Q studies, allowing for easy entry of Q sorts. They enable the input of Q-sorts and the computation of correlations between them. The Q sorts are then subjected to factor analysis, and the resulting factors are rotated using a method for a more appropriate factor structure. Finally, this report analyses the relevant factors and presents a comprehensive overview. The report includes various tables on factor loadings, statements that distinguish each of the factors, and consensus statements (37,38).

3.5. Analysis

The analysis is conducted using either PCA or centroid factor analysis. Factor analysis usually produces multiple statistically plausible factor solutions. The resulting factors can be rotated either analytically using Varimax or judgmentally with the help of two-dimensional plots. To assess the factor solutions, examine the eigenvalues and explained variance, which indicate the degree to which each factor is related to the other factors, as well as the number of participants with significant factor loadings for each factor (37,38). The data regarding the analysis program using factor extraction and rotation in the studies carried out with the Q methodology are given below.

3.5.1. Type of factor extraction. The significance of the factor loadings is calculated using the formula for zero-order correlation coefficients, where SE = 1/ (sqrt[N], where SE is the standard error and N is the number of Q-rank expressions. Correlations are considered statistically significant at the 0.01 level if they exceed 2.58 standard errors. Expressions that do not exceed this threshold and are loaded on more than one factor are excluded. In the studies, Principal Component Analysis (PCA) or Centroid Factor Analysis is used for factor extraction. While PCA was used in 50% of the studies we reviewed, centroid analysis was used in only one study (11). The type of factor extraction was not reported in 45% of the studies (Table 3) (17,23,26,28,30,33,34).

Table 3. *Factor results, distinguishing, and study conclusions in in included studies*

Author, Year	Factor Label	Distinguishing/ Consensus statement	Conclusion of Study
(Jueng et al., 2017)	1) emphasized the obstacles to evidence searching and reading ability; 2) emphasized the organizational promotive strategies; 3) emphasized the available supportive resources; 4) emphasized the significance of EBN; and 5) emphasized the evidence-searching ability and external incentives	Consensus statement: 1 Distinguishing statements: p < .05	The exploration of clustering nurses' perceptions may facilitate the development of customized strategies to enable more appropriate training
(Kim, 2017).	1) "cautious type"; 2) "positive acceptance type"; 3) "considering reality type."	Consensus statement: Not stated Distinguishing statement: Strong agreement (Z score +1 or greater) and disagreement (Z score -1 or less)	The results of this study may help promoting application of CATs as a nursing practice.
(Kim, Lee & Chang, 2018).	1) finding the value of life by focusing on the meaning of a new life through hemodialysis, 2) compromising actively with the situation of hemodialysis, 3) internalizing sadness and emphasizing the meaning of life itself, 4) finding a support system to help overcome hemodialysis, and 5) building the will to live by getting strength from family.	Distinguishing statements: Not stated Consensus statement: Not stated	This study can help nurses understand the resilience of patients on hemodialysis and presents strategies that can be used to develop an intervention program to improve the resilience of patients on hemodialysis.
(Chen et al., 2018)	1) ''conflict with personal values,'' 2) ''excessive of workload,'' 3) ''curbing of autonomy,'' 4) ''constraint engendered by organizational norms,'' 5) ''self-expectation frustration.''	Distinguishing statements (p < .05) Consensus statement: Not stated	The findings can be used to construct multifaceted policies and solutions and to incorporate ethical education in training programs
(Galekop et al., 2019).	1) 'The patient in the driver seat' 2) 'The patient in the passenger seat'	Distinguishing statements: * p<.01 Consensus statement: 15	Different types of care and support may be most adequate to satisfy the different needs and preferences of patients with either of these views.
(Zhu et al., 2019).	1) The "Endurers" Perspective 2) The "Supporters" Perspective 3) The "Worriers" Perspective 4) The "Wabblers" Perspective	Not stated	Patients and caregivers were more likely to have a passive attitude and false cognition towards pain and analgesic drugs. Nurses often play a role as a supporter; however it is hard for them to understand their important role in facilitating patient involvement in their pain management.
(Lee & Chang, 2019).	1) confusion from a lack of knowledge, 2) concerns about a negative future, 3) overdependence on information, 4) and expectations for a positive outlook about favourable result.	Not stated	The findings suggest various intervention methods for patients with DFU facing uncertainty about their prognosis based on the 4 viewpoints identified. The identified cation of the factor causing uncertainty and integration of all uncertainty factors are expected to be used as the basis for reducing patients' uncertainty and helping nurses care for patients more effectively
(Agapie et al., 2019)	They identify three patient personas: 1) accommodating information seekers, 2) involved safety guardians, and 3) self-managing participators. They identify three caregiver personas: 1) cooperative information seekers, 2) vocal participators, and 3) hands-off safety guardians.	Distinguishing statements: p >.05 Consensus Statement: 5	These personas can inform future tools designed to support communication and information management for hospitalized patients and caregivers
(Wilson et al., 2020).	1) refer and support; 2) object to or deflect the request; 3) engage and explore the request; or 4) assess needs and provide information	Distinguishing Statement: .01 significance level. Consensu statement: Not reported	The findings underscore the complexity of intentionality in assisted-dying nursing practice and differences from other forms of end-of-life care, particularly regarding patient advocacy and conscientious objection.

Table 3. *(Continued)*

(Chon et al., 2020).	1) Support-based acceptance 2) Gloomy isolation 3) Active life-oriented	Consensus statement: 6 Distinguishing statement: Not reported	This study highlights that clinical nurses and health professionals should understand the perceptions of resilience of patients undergoing PD and consider their viewpoints in the caring and treatment process.
(Guptarak et al., 2020)	1) Influenced by personal experience 2) Influenced by Thai and Buddhism beliefs 3) Influenced by contemporary beliefs	Consensus statement: 3 Distinguishing statement: Not reported	Participants who felt strongly rooted in their culture and beliefs were homogeneous in recognizing the need for evidence-based practice. Nurses aware of the nature and sources of their beliefs and those of patients are well-placed to balance maintenance of cultural traditions with the need to provide evidence-based practice
(Palese et al., 2020)	1) "Patient safety-oriented" 2) 'Nursing task-oriented" 3) 'Team process-oriented'	Consensus statement: 14 Distinguishing statement: * p = < .05; **p = < .01; ***p = .001	Three profiles of nurses emerged in the same setting with significant differences both in the statistical order of priorities and in their practical implication
(Jones, 2020)	1) concept of self-care; 2) professional responsibility and paternalism; 3) barriers to self-care; d) educating patients; e) and patient empowerment	Not stated	Community nurses should ensure that they adopt a biopsychosocial model of care to meet patients' holistic needs. A focus on self-care must be integral to the function and purpose of community nursing services to drive forward a change in culture
(Yeun & Jeon, 2020).	I: Optimistic Mind, II: Dependency on Medicine, III: Exercise Preference	Consensus statement:4 Distinguishing statement:	It is important to develop customized nursing interventions that consider the characteristics of each patient group with gastric cancer. Health professionals should assess the attitudes of patients with gastric cancer about coping with fatigue, explore their situation, and consider their lifestyle
(Hestdal & Skorpen, 2020)	(i) 'Feeling safe through presence, trust and hope'; (ii) 'Feeling safe occurs when the patient is seen, met and informed'; (iii) 'Feeling alone and angry at oneself'.	Characterised statements with p < .01 are marked ** and with p < .05 are marked *. Consensus statements that are not significant at p > .01 are marked # and at p > .05 are marked ##.	There exist differences between how the nursing staff, the youngest and the oldest elderly patients experienced the preoperative period and what can enhance or alleviate their suffering. Where the youngest elderly communicated safety through trust and relatives' presence, the oldest elderly communicated insecurity in relation to staff and experienced severe pain and loneliness.
(Hengeveld et al., 2021).	Four themes emerged from the competencies that were considered most important (a) believed preconditions for Family centred care (FCC); (b) promote a partnership between nurses, patients and families; (c) be a basic element of nursing; and (d) represent a necessary positive attitude and strong beliefs of the added value of FCC. Three themes appeared from the competencies that were considered least important (a) were not considered a specific nursing competency; (b) demand a multidisciplinary approach; (c) require that patients and families take own responsibility.	Distinguishing statement: *p > .05 and **p > .01. Consensus Statement: 12	Among healthcare professionals, there is substantial disagreement on which nursing competencies are deemed most important for FCC.
(Lim et al., 2021)	(I) acknowledge the consumers' experience of hospitalization; (II) reassure consumers who are going through a difficult time; (III) interact to explore the impact of the consumer's negative lived experiences; (IV) support co-production to reduce triggers for aggression; and (V) encourage and support consumers to take ownership of their recovery journey.	Not stated	These findings provide nurses with a pragmatic approach to use recovery focused care for consumers with risk for aggression and contribute positively to the consumers' personal recovery.

Table 3. *(Continued)*

(Kang et al., 2022)	a) "detect the deviant changes leading to instability", b) "focus on the patient's degree of cognitive recovery within the framework of recovery time", c) "awareness of possible clues based on the patient's underlying disease(s)"	Not stated	These findings are expected to be utilized as a basis for more practical and accessible Post Anaesthesia Care Units nurse delirium education that reflects nurses' subjective viewpoints explained by the three identified factors
(Kim, 2022)	a) "Emphasizing the right to self-determination," b) "Avoiding burdening the family," c) "Putting life first," and d) "Connotations with a complex perspective."	Not stated	This study provides strategies for preparing various nursing interventions or policies for the establishment of a well-dying culture based on the four identified perspectives on priorities at the end of life
(Lee & Chang, 2022)	a)"Focusing on care within the boundary of current patient demands," b)"Comparing continuously the priorities on wound healing and disease care," c)"Preparing and preventing from worsening via tracking care in advance," d)"Moving forward with a clear direction by confronting the declining condition."	Distinguishing statement: * P < .05, ** P < .01 Consensus statement: Not reported	the results of this study are used in the development of nursing education that reflects professional perspectives of palliative wound care, thus helping to improve nursing competencies in palliative care

3.5.2. Type of rotation. Rotation is performed to obtain a variable with a significantly higher load on a single factor. Some variables may be significantly loaded on more than one factor. As a result of the rotation, the load of the same variable on other factors is lower. This maximizes the variance explained when rotation is performed. Unlike scale studies, Q methodology treats individuals as variables rather than items. Therefore, it is not meaningful to interpret the non-rotated factors. Most studies use Varimax orthogonal or manual rotation methods, the most commonly used being Varimax. Varimax rotation (60%) was used in 12 studies included in the study. The type of rotation was not reported (40%) in 8 studies (17,22-24,26,28,33).

3.5.3. Analysis program. Researchers use specialized software such as PQMethod, PCQ, and Ken-Q/KADE to analyze Q sorts. We identified PQMethod (60%) and PC-QUANL (15%) as the most commonly used analysis programs in studies. However, Ken-Q Analysis Desktop Edition (KADE) was used in one study (18) and Q Assessor in another study (11). The analysis program used in the three studies was not reported (17,29,30).

3.6. Results: Variance Explained

The total amount of variance explained in the studies ranges from 29% (18) to 70% (29), which was not reported in 4 of the studies (19,21,24,30).

3.7. Additional Methods of Data Collection

Q methodology is a mixed method that combines the subjective opinions of people on a given topic, both qualitatively and quantitatively. In most of the studies included in the study (80%), in-depth interviews were conducted before, during, or after the study. Only 4 of the studies used Q-sort and did not conduct the qualitative phase of the study (11,17,18,26).

4. DISCUSSION

Q methodology is a research method that explores human perspectives (39). It is recommended that the Q methodology be used when exploring complex or controversial issues in health care research to gain a deeper understanding of different perspectives (4). Therefore, the use of this method can be preferred for examining the subjective evaluations of a group in a systematic, effective, and holistic way (40). Identifying the feelings, thoughts, perceptions, attitudes, and needs of disadvantaged individuals or people diagnosed with diseases can be valuable. This can help to identify differences and similarities and assist nurses in determining appropriate care pathways.

This scoping review examines the use of Q methodology in nursing care. A total of 20 studies conducted between 2017 and 2022 were identified through an extensive search and rigorous screening process. Hensel et al. (2020) identified 18 studies in their scoping review on the use of Q methodology in nursing education studies between 2015 and 2020 (1). Churruca et al. reached 289 studies between 1966 and 2019 in their scoping review of Q methodology in health services research (4). The scoping reviews examining studies using the Q method indicate that the frequency and prevalence of the method is limited worldwide, demonstrating the need to conduct studies on the implementation and use of the Q method.

When comparing the methodology of this scoping review to others in the field using Q-methodology, it was found that the most commonly used strategy for developing Q-sets was literature review (1,4). It was found that the most common method used in data collection in Q-method is the face-to-face method (17,22,26). Some studies (11,18,21,29) preferred online and email methods. This review reveals that PCA was the most frequently used factor extraction method. Additionally, the review indicates that the PQ method and PC-QUANL were the most commonly used analysis programs in the studies. Churruca et al (4) and Hensel et al (1) also found similar results to our study. Although the use of the methodology has increased in recent years, its prevalence in the field is still limited. The reviewed studies adequately explain how the Q-method is applied and the meaning of the results. However, the studies generally did not provide detailed information such as how the Q-sets were created, what type of analyses were performed, the characteristics of the analyses to be used, factor extraction and variance. There is a need for studies that provide detailed information and for more studies in this area in order for the methodology to become widespread.

This scoping review reveals that Q methodology is used in nursing care for adult patients, mostly in the context of chronic and end-of-life care. Nurses should consider patients' perspectives on resilience when caring for those diagnosed with chronic diseases (26,28). In a study investigating the attitudes of patients, caregivers, and nurses towards patient participation in pain management, the results were categorized into four factors: 'Endurers', 'Supporters', 'Worriers', and 'Wobblers'. It was found that nurses typically adopt a supportive role (31). Another study found that nurses were able to balance the need to provide evidence-based practice with maintaining cultural traditions (22). However, studies on nursing care using Q methodology have shown limited research on different age groups, such as children and adolescents. To address this gap, it is recommended to conduct studies that provide both quantitative and qualitative data, are easily applicable, and are specific to each age group. This can significantly contribute to the field.

Since care is planned specifically for individuals and their needs, the use of Q methodology in this area is considered to be quite stimulating. A scoping review using Q methodology was conducted in the field of nursing education. In the review by Hensel et al (1), which summarized studies using the Q methodology in nursing education, three areas were identified: attitudes to patient populations or environments (n=7), perceptions of teaching methods (n=9), or beliefs/practice issues about professionals (n=2). Seven of the studies examined the use of simulation in education. Findings from the studies were found to be used for purposes such as informing the field of education, creating curricula, and evaluating programs. According to another scoping review of the use of the Q methodology in the health care field, health care professional education (n = 50), nursing practice (n = 39), and mental health (n = 37) are the main subject areas covered (4). It is clear that there are no commonalities or common themes between studies when examining scoping reviews that include nursing studies.

The use of Q methodology in nursing, which cannot be expressed only in numbers and ratios, can be beneficial in providing a holistic and innovative perspective considering both quantitative and qualitative dimensions. This method can be used to determine how individuals perceive and expect care, how care is planned and delivered, and how appropriate interventions are made. The use of this method, especially in the field of care, which is characterized by individual needs and has a quantitative and qualitative dimension, is very valuable for the planning and implementation of individual-centered, holistic, and quality care.

4.1. Strengths and Limitations

The strength of this review is that it is the first study to use both the Q methodology and the keywords identified in relation to nursing. The reviews were conducted independently by two researchers. Later, the researchers met and a third researcher provided a review to clarify the inconsistencies on the identified studies. However, it is expected to raise awareness among researchers as studies on this topic are limited in the field.

There are several limitations to this study. Only studies published in English were included in the study, so studies in other languages were overlooked. A formal quality assessment was not performed because there was no valid and reliable checklist to assess the included articles.

5. CONCLUSION

Q-methodology is an approach that uses reverse factor analysis to reduce participants' perspectives to fewer common ones, thereby simplifying complexity to some extent and aiming to examine complicated issues. Our scoping review found that the use of Q methodology has increased in the field of nursing. However, more research is needed in diverse areas. This scoping review has attempted to identify commonalities in how the Q methodology is used in nursing, its areas of application and the potential value of the approach that could lead to greater use of the Q methodology in the future.

Funding: *This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.*
Conflicts of interest: *The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.*
Ethics Committee Approval: *The article does not have ethical approval as it is a review.*
Peer-review: *Externally peer-reviewed.*
Author Contributions:
Research idea: RÇ, EGŞ, NA
Design of the study: RÇ, EGŞ, NA
Acquisition of data for the study: RÇ, EGŞ
Analysis of data for the study: RÇ, EGŞ, NA
Interpretation of data for the study: RÇ, EGŞ, NA
Drafting the manuscript: RÇ, EGŞ, NA
Revising it critically for important intellectual content: RÇ, EGŞ, NA
Final approval of the version to be published: RÇ, EGŞ, NA

REFERENCES

[1] Hensel D, Toronto C, Lawless J, Burgess J. A scoping review of Q methodology nursing education studies. Nurse Educ Today. 2022;109:105220. https://doi.org/10.1016/j.nedt.2021.105220.

[2] Yeun EJ, Jeon M. Attitudes about coping with fatigue in patients with gastric cancer: A Q-methodology study. Gastroenterol Nurs. 2020;43(1):97-105. https://doi.org/10.1097/SGA.000.000.0000000390.

[3] Chung J, Chen HC. Using Q methodology in nursing education research: A case study. Nurse Educ. 2020;45(2):E19-E20. https://doi.org/10.1097/NNE.000.000.0000000692.

[4] Churruca K, Ludlow K, Wu W, Gibbons K, Nguyen HM, Ellis LA, Braithwaite J. A scoping review of Q-methodology in healthcare research. BMC Med Res Methodol. 2021;21(1):1-17. https://doi.org/10.1186/S12874.021.01309-7.

[5] Lundberg A, de Leeuw R, Aliani R. Using Q methodology: Sorting out subjectivity in educational research. Educ Res Rev. 2020;31:100361. https://doi.org/10.1016/j.edurev.2020.100361.

[6] Damio SM. Q methodology: An overview and steps to implementation. Asian J Univ Educ. 2016;12(1):119–122.

[7] Morea N. Investigating change in subjectivity: The analysis of Q-sorts in longitudinal research. Res Methods Appl Linguist. 2022;1(3):100025. https://doi.org/10.1016/j.rmal.2022.100025.

[8] Millar DJ, Mason H, Kidd L. What is Q methodology? Evid Based Nurs. 2022;25(3):77-78. https://doi.org/10.1136/ebnurs-2022-103568.

[9] Hensel D, Toronto C. Reading a Q methodology research article. J Contin Educ Nurs. 2022;53(1):10-12. https://doi.org/10.3928/00220.124.20211210-05.

[10] Tornwall J, McDaniel J. Key strategies in scholarly writing instruction for doctor of nursing practice students: A Q-methodology study. Nurse Educ Today. 2022;108:105192. https://doi.org/10.1016/j.nedt.2021.105192.

[11] Wilson M Ed MR, Wiechula RB, Cusack L, Wilson M. Nurses' intentions to respond to requests for legal assisted-dying: A Q-methodological study. J Adv Nurs. 2020;76(2):642-653. https://doi.org/10.1111/JAN.14257.

[12] Munn Z, Stern C, Aromataris E, Lockwood C, Jordan Z. What kind of systematic review should i conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. BMC Med Res Methodol. 2018;18(1). https://doi.org/10.1186/S12874.017.0468-4.

[13] Dziopa F, Ahern K. A Systematic literature review of the applications of Q-technique and its methodology. Methodology. 2011;7(2):39-55. https://doi.org/10.1027/1614-2241/A000021.

[14] Warrens MJ. Five ways to look at Cohen's kappa. J Psychol Psychother. 2015;5:4. https://doi.org/10.4172/2161-0487.100.0197.

[15] Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol ISSN. 2005;8(1):19-32. https://doi.org/10.1080/136.455.7032000119616.

[16] Levac D, Colquhoun H, O'Brien KK. Scoping studies: Advancing the methodology. Implement Sci. 2010;5(1). https://doi.org/10.1186/1748-5908-5-69.

[17] Palese A, Bottega M, Cescutti A, Caruzzo D, Danielis M, Fabris S, Mattussi E, Grassetti L. Depicting clinical nurses' priority perspectives leading to unfinished nursing care: A pilot Q methodology study. J Nurs Manag. 2020;28(8):2146-2156. https://doi.org/10.1111/JONM.13036.

[18] Hengeveld B, Maaskant JM, Lindeboom R, Marshall AP, Vermeulen H, Eskes AM. Nursing competencies for family-centred care in the hospital setting: A multinational Q-methodology study. J Adv Nurs. 2021;77(4):1783-1799. https://doi.org/10.1111/JAN.14719.

[19] Jueng RN, Huang SH, Li TP, Liang HY, Huang CM. Application of a Q method study to understanding nurses' perspective of adopting evidence-based nursing. Asian Nurs Res (Korean Soc Nurs Sci). 2017;11(4):253-260. https://doi.org/10.1016/J.ANR.2017.09.001.

[20] Lee YN, Chang SO. Diabetic foot ulcer patients' uncertainty regarding their prognosis: A Q-methodological study. J wound, ostomy, Cont Nurs Off Publ Wound, Ostomy Cont Nurses Soc. 2019;46(6):531-538. https://doi.org/10.1097/WON.000.000.0000000597.

[21] Chen PP, Lee HL, Huang SH, Wang CL, Huang CM. Nurses' perspectives on moral distress. Nurs Ethics. 2018;25(6):734-745. https://doi.org/10.1177/096.973.3016664976.

[22] Guptarak M, Conway J, Stone TE, Fongkaew W, Settheekul S, Baxter E. Health beliefs of nurses in Northern Thailand: a Q-methodology study. J Transcult Nurs. 2020;31(4):350-359. https://doi.org/10.1177/104.365.9619865589.

[23] Kang M, Kim EY, Chang SO. Nurses' management of older patients with post-anesthesia delirium: A Q methodology approach. J Korean Gerontol Nurs. 2022;24(4):454-463. https://doi.org/10.17079/JKGN.2022.24.4.454.

[24] Kim AK. Acceptance of complementary and alternative therapy among nurses: A Q-methodological Study. Korean J Adult Nurs. 2017;29(4):441-449. https://doi.org/10.7475/KJAN.2017.29.4.441.

[25] Agapie E, Kendall L, Mishra SR, et al. Using priorities of hospitalized patients and their caregivers to develop personas. AMIA Annu Symp Proc. 2019;2019:200.

[26] Chon MY, Yeun EJ, Jung KH, Jo Y, Lee KR. Perceptions of resilience in patients undergoing peritoneal dialysis: A Q-methodology study. Nurs Health Sci. 2020;22(1):108-117. https://doi.org/10.1111/NHS.12655.

[27] Kim IJ. Exploring societal perspectives on priorities at the end of life in South Korea using Q-methodology. Japan J Nurs Sci. 2022;19(4):e12495. https://doi.org/10.1111/JJNS.12495.

[28] Kim EY, Lee YN, Chang SO. Exploring subjective frames of patients on hemodialysis on acquiring resilience: A Q methodology study. Nephrol Nurs J J Am Nephrol Nurses' Assoc. 2018;45(4):357-368.

[29] Lim E, Wynaden D, Heslop K. Using Q-methodology to explore mental health nurses' knowledge and skills to use recovery-focused care to reduce aggression in acute mental health settings. Int J Ment Health Nurs. 2021;30(2):413-426. https://doi.org/10.1111/INM.12802.

[30] Jones D. Exploring the attitudes, beliefs and behaviours of community nurses towards patient self-care. Prim Heal Care. 2020;30(5):22-29. https://doi.org/10.7748/PHC.2020.E1640.

[31] Zhu N, Xu P, Ma J, Liang Y, Xu X, Li J. Patients, caregivers and nurses' attitudes toward patients' participation in knee and hip joint replacement pain management: a Q-methodology study. Contemp Nurse. 2019;55(6):507-521. https://doi.org/10.1080/10376.178.2019.1666019.

[32] Hestdal T, Skorpen F. Experiences of suffering among elderly hip-fracture patients during the preoperative period: patients' and nurse's perspective. *Scand J Caring Sci*. 2020;34(2):409-419. https://doi.org/10.1111/SCS.12742.

[33] Galekop MMJ, Van Dijk HM, Van Exel J, Cramm JM. Views of professionals and volunteers in palliative care on patient-centred care: A Q-methodology study in the Netherlands. BMC Palliat Care. 2019;18(1):1-9. https://doi.org/10.1186/S12904.019.0479-5.

[34] Lee YN, Chang SO. How do wound care nurses structure the subjective frame on palliative wound care? A Q-methodology approach. BMC Nurs. 2022;21(1):1-9. https://doi.org/10.1186/S12912.022.00900-7.

[35] Ten Klooster P, Visser M, De Jong M. Comparing two image research instruments: The Q-sort method versus the Likert attitude questionnaire. Food Qual Prefer. 2008;19(5):511-518. https://doi.org/10.1016/j.foodqual.2008.02.007.

[36] Ramlo S. Mixed method lessons learned from 80 years of Q methodology. J Mix Methods Res. 2016;10(1):28-45. https://doi.org/10.1177/155.868.9815610998.

[37] Banasick S. KADE: A desktop application for Q methodology. J Open Source Softw. 2019;4(36):1360. https://doi.org/10.21105/ joss.01360.

[38] Schmolck P. PQMethod Software. Published 2008. Accessed March 20, 2024. http://schmolck.org/qmethod/.

[39] Zabala A, Sandbrook C, Mukherjee N. When and how to use Q methodology to understand perspectives in conservation research. Conserv Biol. 2018;32(5):1185-1194. https://doi.org/10.1111/cobi.13123.

[40] Taheri F, Forouzani M, Yazdanpanah M, Ajili A. How farmers perceive the impact of dust phenomenon on agricultural production activities: A Q-methodology study. J Arid Environ. 2020;173:104028. https://doi.org/10.1016/j.jaridenv.2019.104028.

Appendix 1.

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Page 1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Page 2
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Page 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	NA
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Page 5-6, and table 1
Information sources	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Page 4, and supplementary 1
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplemantary 1
Selection of sources of evidence	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Page 6, and figure 1
Data charting process	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Page 7, and Supp. 2, Supp.3
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Page 7, and Supp. 2, Supp.3
Critical appraisal of individual sources of evidence	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	NA
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Page 7
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Page 6, and figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Table 2 and table 3
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	NA
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Table 2 and Table 3
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Page 7-18
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Page 19-23
Limitations	20	Discuss the limitations of the scoping review process.	Page 22
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Page 23
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	NA

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann Intern Med.; 169:467–473. doi: 10.7326/M18-0850

Appendix 2. Literature Search Strings

Database	Search Terms	
PubMed	**Main Concept**	**Keywords**
	Q sort	(q-sort[Title/Abstract] OR q sort[Title/Abstract] OR q-method*[Title/Abstract] OR q method*[Title/Abstract]) AND (nursing care[Title/Abstract] OR care[Title/Abstract] OR nurs*[Title/Abstract])
	nursing care	("q-sort"[Title/Abstract] OR "q sort"[Title/Abstract] OR "q-method*"[Title/Abstract] OR "q method*"[Title/Abstract]) AND ("nursing care"[Title/Abstract] OR "care"[Title/Abstract] OR "nurs*"[Title/Abstract])
1 AND 2 *Combined search results: 193* *("2017/01/01"[PubDate] : "2022/12/31"[PubDate])*		

Database	Search Terms	
Science Direct	**Main Concept**	**Keywords**
	q sort	("q-sort"[Title/Abstract] OR "q sort"[Title/Abstract] OR "q-method*"[Title/Abstract] OR "q method*"[Title/Abstract])
	nursing care	("nursing care"[Title/Abstract] OR "care"[Title/Abstract] OR "nurs*"[Title/Abstract])
1 AND 2 *Combined search results: 252 results* *("2017/01/01"[PubDate] : "2022/12/31"[PubDate])*		

Database	Search Terms	
Scopus	**Main Concept**	**Keywords**
	q sort	TITLE-ABS-KEY (q-sort OR q OR sort OR q-method* OR q OR method*)
	nursing care	TITLE-ABS-KEY (nursing AND care OR care OR nursing OR nurs*)
1 AND 2 *Combined search results: 122 results* *("2017/01/01"[PubDate] : "2022/12/31"[PubDate])*		

Database	Search Terms	
MEDLINE	Main Concept	Keywords
	q sort	TI-AB (q-sort OR q sort OR q-method OR q method*)
	nursing care	TI-AB (nursing care OR care OR nurs*)
1 AND 2 *Combined search results: 33 results* *("2017/01/01"[PubDate]: "2022/12/31"[PubDate])*		

Database	Search Terms	
Web of Science Core Collection	Main Concept	Keywords
	q sort	TI-AB (q-sort OR q sort OR q-method OR q method*)
	nursing care	TI-AB (nursing care OR care OR nurs*)
1 AND 2 *Combined search results: 169 results* *("2017/01/01"[PubDate] : "2022/12/31"[PubDate])*		

Database	Search Terms	
Google scholar	**Main Concept**	**Keywords**
	q sort	"q-sort" OR "q sort" OR "q-method" OR "q method*" AND "nursing care" OR "care" OR "nursing" OR "nurs*"
	nursing care	
Combined search results: 569 results *("2017/01/01"[PubDate] : "2022/12/31"[PubDate])*		