

Research Article

Quality of Life and End Stage Kidney Disease: Conceptual and Theoretical Issues

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Abstract

Background: Quality of Life (QoL) and Health-Related Quality of Life (HRQoL) are multidimensional concepts. Several tools have been developed to measure these concepts. The aim of this narrative review is to gain a general understanding of QoL concepts, track its theoretical development, and identify the theoretical framework underpinning the concept.

Method: SCOPUS, Cochrane Library, Pro Quest (ASSIA) and EBSCO (CINAHL and Medline) were the main databases searched. Secondary internet resources (Science Direct and Pub Med), and non-electronically published relevant articles were also searched. English was the only language used in the search. Joined and separate keywords were used to find the published literature that discussed QoL generally across all disciplines.

Results: A total of 85 articles met the inclusion criteria: 27 empirical studies and 58 discussion articles (7 HRQoL, 18 concept analyses, 21 QoL definitions and 12 papers were related to different factors of QoL and HRQoL). Four substantial determinants were identified which related to the concepts of QoL and HRQoL among ESKD patient: functional status, co-morbidities, socio-demographic factors, and spirituality. Three main approaches are being used to assess QoL and HRQoL: Generic, disease-specific and individualized measurement measures.

Conclusion: The terms QoL is used interchangeably with other relate terms such as HRQoL, health, and well-being which may

cause confusion for both the researcher and the participants. Healthcare worker should utilise cross cultural knowledge and culturally sensitive skills in providing and maximising good patient care outcomes.

Keywords: End-Stage Kidney Disease (ESKD); Health-Related Quality of Life (HRQoL); Quality of Life (QoL)

Introduction

End-Stage Kidney Disease (ESKD) is a serious, irreversible condition that affects a significant number of people worldwide. ESKD occurs when the estimated Glomerular Filtration Rate (eGFR), is less than 10-15 ml/min/1.73m². It causes significant biochemical abnormalities leading to symptom groups such as the uremic syndrome, pain, and fatigue that may impact negatively on an individual's Quality of Life (QoL) [1]. Studies that measured the prevalence of symptoms in patients with ESKD reported that fatigue, pruritus, and pain were rated as the most distressing to ESKD patients.

The term 'QoL' is a multi-dimensional concept and can have several meanings [2], since several factors related to social and economic aspects must be considered when attempting to define the concept of QoL [3]. Several definitions are available in current literature that define the concept of QoL. With the existing numerous definitions of QoL, researchers, and clinicians, need to be clear about the conceptual definition of QoL so as not to confuse it with the disease process and complications or with treatment side effects.

To narrow and focus on the concept of QoL, the term Health-Related Quality of Life (HRQoL) evolved to reflect the value of health states. HRQoL is determined by the way changes in health and treatment-related symptoms affect the dimensions of one's wellbeing [4]. This description might indicate that HRQoL is entirely constructed by a patient's individual perceptions and that others cannot make judgments about what is best for the patient. Patient perceptions about QoL have been found to have poor correlation with, and wide discrepancies between, practitioners' assessments [5]. Health providers tend to overestimate or underestimate the effects of symptoms on a patient's QoL. Although care providers believe that they know what patients want, patients' feelings, preferences and perceptions cannot be assumed [6].

The aim of this narrative review is to analyze the conceptual and theoretical issues associated with QoL as well as the related concept of HRQoL and its measurement among patients experiencing ESKD.

Methods

The search for articles relevant to this review was initiated by a comprehensive search using four electronic literature databases [SCOPUS, Cochran Library, Pro Quest (ASSIA) and EBSCO (CINAHL and Medline)]. The search also covered secondary internet resources (Science Direct and Pub Med), as well as non

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electronically published relevant articles to gain a full view of the relevant information published without specific dates. EBSCO, which consists of CINAHL and Medline, was the initial database accessed as it is known to contain regularly updated evidence-based healthcare literature. The literature search was not limited to any specific date in order to obtain the most applicable and relevant evidence. English was the only language used in the search because of the inability to interpret non-English published articles.

Both joined and separate keywords were used to find the published literature that discussed quality of life generally across all disciplines: “Quality of life” - “health related quality of life” - “integrative quality of life” - “QOL” or “QoL” - “QoL” - “HRQoL definition” - “QoL” or “HRQoL concept” or “HRQoL conceptualization” - “QoL” or “HRQoL theory” - “QoL” or “HRQoL operationalisation” - “End-Stage Kidney Disease”- “ESKD”. The inclusion and exclusion criteria are summarized in table 1.

Inclusion	Exclusion
1. Published in English	1. Did not pertain to the QoL of humans
2. Pertained to QoL and HRQoL concepts and theories	2. Published in a non-English language
3. Included an adult population (>18 years of age)	3. Published as general information, dissertations, editorials and clinical opinions
4. Were forms of published evidence	4. Included a paediatric population
5. Were articles with findings derived from QoL and HRQoL concepts	

Table 1: Shows the inclusion and exclusion criteria.

Data were retrieved from empirical studies and discussion articles and were extracted using relevant extraction methods. The results of the “empirical studies articles” were reported based on a modified data-extraction form suggested by the Joanna Briggs Institute (JBI); whereas the results of the “discussion articles” were reported on three different themes (QoL definitions, conceptualization of QoL and theoretical factors) in a tabular form based on data-extraction tables using criteria suggested by Garrard’s (2007) Matrix Method. The Matrix Method is both a structure and a process for systematically reviewing literature.

Consistent with Garrard’s approach, the review matrix table, a place to record notes about papers using columns and rows, provides a standard structure for creating order. Each of the “discussion articles” was evaluated in ascending alphabetical order, using a structured abstracting form with seven columns: author’s name, publication year, country, paper type, paper purpose and context, participants (if any) and study findings (Appendix 1). The synthesis method employed in the Matrix Method is a critical-analysis and review process of the literature on a specific topic. Results were then tabulated and presented using the following headings: author and year of publication, country, design, sample size, outcome measures and key results.

Results

The inclusive search revealed a total of 4,658 articles. The identified articles were screened against titles in order to match inclusion and exclusion criteria, which then resulted in the exclusion of 4,144 articles. The remaining 514 articles were then checked for duplication using the End Note X4 reference management software program in which 148 articles were identified as duplicates and were excluded.

Checking the remaining articles against inclusion and exclusion criteria, 193 articles were removed for not meeting inclusion criteria, which left a remaining sum of 173 articles to be screened. Figures 1,2 shows the flow of literature identified.

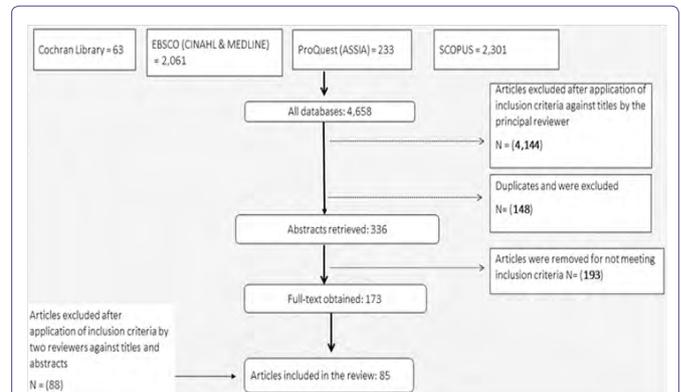


Figure 1: Shows the flow of the identified literature after checking the remaining articles against inclusion and exclusion criteria, 193 articles were removed for not meeting inclusion criteria, which left a remaining sum of 173 articles to be screened.

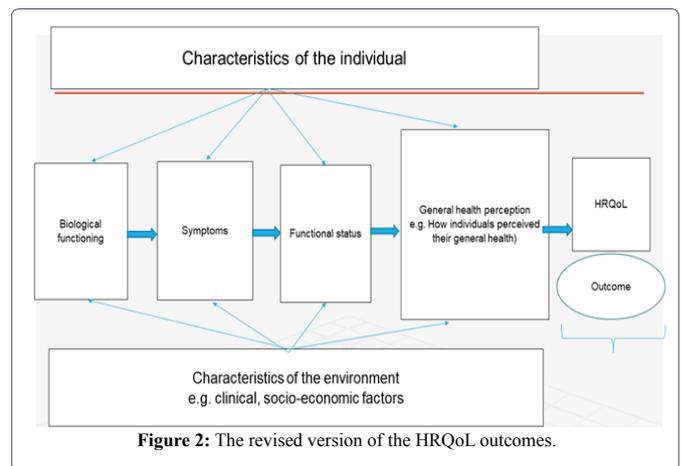


Figure 2: The revised version of the HRQoL outcomes.

After excluding duplicate articles and those articles fitting the exclusion criteria (Appendix 2), two reviewers sorted out the list of the potential articles (173 articles) for inclusion independently by reviewing each article’s title and abstract. The aim was to maintain a rigorous selection process and minimize selection bias. A table was created to compare the ratings of both reviewers of articles to be included in the review that met the inclusion and exclusion criteria. Agreement between reviewers was reached in 70 articles. Disagreement occurred in 55 articles and on those occasions, a third researcher reviewed these further. This resulted in 85 full-text papers to be reviewed.

A final total of 85 articles met the inclusion criteria and are included in this narrative review: 27 empirical studies and 58 discussion articles (seven HRQoL; 18 concept analyses; 21 QoL definitions; and 12 papers related to different factors of QoL and HRQoL). The quality of the “empirical study papers” was assessed using the quality appraisal forms of the Critical Appraisal Skills Program (CASP) criteria; and for “discussion articles”, the Joanna Briggs Institute (JBI) critical appraisal checklist was used (Appendix 3.1 & 3.2).

Discussion

The notion of QoL

Although the notion of QoL in nephrology started appearing in literature in the 1970s, it is often used to describe different physical and psychosocial variables including health status, functions, behaviours, life satisfaction, perceptions, and symptoms [7]. The term 'QoL' has been linked and used interchangeably with different related concepts such as 'HRQoL' and 'functional ability' [8]. The interchangeable use of the terms 'health', 'functional ability' and 'QoL', far from clarifying and providing exact meaning, might add additional confusion. In spite of inconsistency and the complexity of defining QoL, there is a consistency in literature that QoL is a multidimensional concept.

The majority of authors who conceptualize QoL have introduced the individual factor as a common criterion of QoL. Personal indicators describe individuals' feelings about whether they are satisfied with their life and whether they feel good about things in general. It is believed that these indicators exist in the consciousness of an individual and identifying the importance of them to an individual can only be known by asking the person to state them [9]. Measuring personal factors, however, is difficult and is a subject that is always under debate due to its dynamic and individualised nature.

Most QoL researchers, however, suggest that the number of aspects of life is less important when compared with the ability to recognize and represent individual needs. This element should be reflected by QoL frameworks to recognize the need for a multi element framework and to realize that individuals know what is important to them. The essential characteristics of any set of life aspects is that they represent, in aggregate, the complete QoL construct [10]. Therefore, QoL aspects should be considered as the set of elements to which a variable is limited [11], or, in other words, the range over which the concept of QoL extends. The concepts that researchers depend on when measuring QoL are not theory-based, or at the very minimum are not based on a tested conceptual model. QoL is composed of personal, health, as well as socio environmental, dimensions and these should be considered equally in any intended measurement of both concepts.

The relationship between QoL and health

There is an increased acceptance in the literature of using QoL as a critical endpoint in medical research. Yet, there is little consensus on how it differs from perceived health-status. The term 'health' is usually referred to as the absence of disease and illness, which might indicate a good level of quality of life on an individual level. Most of the measures of health status have considered health as a baseline for QoL [12]. However, a positive conception of health is difficult to measure due to the lack of agreement over its definition [13]. Also, it is difficult to determine if the state of health has been achieved because of the absence of a unified operational definition for the term 'health'. Clinicians' judgment might focus on the absence of disease, whereas other professionals, and indeed patients, might see it as the ability to carry out normal everyday tasks, feeling strong and fit to carry out life.

The WHO definition of 'health' as a state of complete physical, mental and social well-being provided a new focus to the borders of the meaning of health rather than a narrow (disease-based) focus [14]. This step was followed by the development of measures of positive

health. Currently, there is broad agreement that the concept of positive health is more than the absence of disease or even disability, but is about full functioning, efficiency of mind and body and social adjustment [15-17]. By reflecting on the concept of QoL, it can be realised that 'health' is a component of QoL with a kind of tautology and overlap existing between the concepts.

Health-related QoL

Because the majority of life domains are related to health, the term health-related quality of life 'HRQoL' is used to differentiate and specify health related issues from the general issues of quality of life. The term HRQoL was developed by psychological and sociological researchers primarily to help measure the health domains that influence an individual's physical and mental health status [18]. HRQoL as a concept, therefore, is more appropriate in that it can be measured within distinct components which can be interpreted separately [19].

Both QoL and HRQoL concepts represent patients' own satisfaction with life and can be influenced by how they perceive the physical, mental, and social effects of ESKD on their daily living [20,21]. This suggests that QoL and HRQoL are individualised concepts. That is, ESKD may be considered as an irritation for one patient but may be severely frustrating for others [22]. Studies that examined QoL and HRQoL in ESKD patients with different ethnicities and religious beliefs found significant differences in their perceptions about factors that make up their overall QoL [23-25]. Assessing QoL and HRQoL, therefore, using measures that are able to capture patients' individualised experiences of health becomes a vital and often required part of health outcomes appraisal [26,27].

Measurement of HRQoL has the potential to provide important additional information about the wellbeing of individuals with ESKD which is not readily available from the clinical and laboratory assessments currently used to monitor patients [28]. Various measures are used with different languages, including Arabic Language, to assess HRQoL and its predictors, such as generic and disease-specific instruments. Generic measures are the ones most commonly used to evaluate different aspects of HRQoL: physical, psychological and social as well as perceived well-being; and disease or condition-specific measures which evaluate the particular symptom or condition that might be associated with level of QoL. Measuring such personal and complex theoretical concepts, therefore, is difficult, and, as a result, individualised QoL tools were developed. These tools allow respondents to nominate the areas of life which are most important, rate their level of functioning or satisfaction with each, and indicate the relative importance of each to their overall quality of life. However, there are very limited studies that have used a combination of generic QoL measures, disease-specific measures, and QoL individualised measures. This study has considered this gap in assessing QoL.

HRQoL and ESKD patients

The studies that examined QoL and HRQoL among ESKD patients revealed that patient's life is affected due to major Co-morbidities, physical, mental, socioeconomic, and spiritual factors. Patients affected by ESKD have to receive dialysis for survival on a routine basis which creates uncertainty about their future, which may change their perception about their self and self-confidence, and sometimes bring about a reversal in family roles [29].

Co-morbidities such as malnutrition, anaemia, and Congestive Heart Failure (CHF) are strong determinant of HRQoL in individuals with ESKD. Hypoalbuminemia (albumin <35g/L) influenced physical composite summary negatively by affecting physical functioning and general health and emotional well-being [30]. Anaemia has also been shown to impact on HRQoL in persons with ESKD. Anaemia severity (haematocrit <33%) is associated with poor physical function, whereas the effect on social function was modest. A pre-existing myocardial infarction was the most common observed predictor of decline in HRQoL influencing physical role-functioning, general health and emotional role-functioning. Similarly, a history of Congestive Heart Failure (CHF) was associated with decline of HRQoL in ESKD patients [31].

Functional status, including physical functioning, role functioning, social functioning, and mental functioning as a result of disease symptoms and treatment regimens, is usually limited in patients with ESKD. Studies that have used physical performance, health, and self-reported measures reported low physical functioning in patients with ESKD [32-34]. Patients engaged in social activities reported better HRQoL, whereas social isolation and decreased social interactions were associated with worse HRQoL [3]. This might suggest that patients who develop an appropriate adaptive strategy to manage the stress stemming from the disease and subsequent HD treatment might be able to maintain a better QoL [35-37].

Socio-demographic factors, such as gender, age, socioeconomic status, and marital status, correlate with HRQoL in ESKD patients. Female patients on HD consistently reported worse HRQoL when compared to men [31,38]. They had lower scores for physical functioning, emotional well-being, social function, and increased fatigue. Elderly patients also reported lower HRQoL in most of the HRQoL measures, particularly on physical functioning. Employment and marital status were associated positively with score of QoL and HRQoL [39]. Patients who were employed and were married or had a marriage-like relationship had higher mental health [40]. Similarly, patients who had a higher level of education associated with better HRQoL [41].

Spiritual aspect is the fourth determinant of HRQoL which can also be seen as a determinant of QoL. It refers to the affirmation of an individual's life in relation to God, self and community [42]. It falls very much in line with one's personal values, standards of conduct and the spiritual beliefs that shape one's life. The importance of this aspect has often been noted in the literature. The emphasis in this aspect of life might be on the importance of spiritual aspect as a dimension that may help to organize an individual's values so as to maintain a better QoL and HRQoL. This was highlighted by the literature that examined the influence of religiousness on HRQoL [43-45].

Religiosity is often understood as an individual's involvement in a set of beliefs and social activities as a means of spiritual expression and this may include adherence to religious practices and traditions, such as Christmas, fasting during Ramadan, or adhering to specific dietary regimens such as avoiding alcohol and being vegetarian. The interplay between the two concepts of spirituality and religiosity may affect how individuals live and may also affect their moral decisions [44]. These consequently affect their day-to-day choices. In Islam, for instance, being religious is considered an essential element of happiness. Muslims perceive life satisfaction to be connected with

(Allah's or God's) satisfaction through the dialogue and performance of worship, which results in the belief of having a pleasant and satisfied life [46].

Healthcare providers including nephrologists and nephrology nurses are encouraged to deal with patients from various ethnicities and cultures. Nephrologists and nephrology nurses are the centre of care for ESKD patients; thus, they should utilise cross cultural knowledge and culturally sensitive skills in providing and maximising good patient care outcomes. ESKD patients are close to the nephrology healthcare team because they spend around 15 hours each week in dialysis units attending dialysis session. Thus, the healthcare providers need to understand that HRQoL is important in improving renal care services and focus on the development and application of clear concepts that look into psychosocial aspects of care, like emotional status, and social involvement.

Measures of QoL and HRQoL in ESKD patients

Three main approaches are used to assess QoL and HRQoL: Generic, disease specific and individualized measures. Many of the measures that have been developed are currently widely used and have been translated into different languages including Arabic. Generic instruments, sometimes referred to as health measures, for instance the Short Form-36 (SF36), attempt to measure a broad range of life aspects related to HRQoL. These measures cover a range of areas and can be used across different populations.

The perceived strength of these instruments is their ability to allow comparisons of outcomes to be made between the different groups measured [47]. Additionally, they provide the ability to monitor and screen large populations within different age spectrums. However, the use of such measures to assess impairment-specific populations, such as those people with chronic diseases, should be verified in order to ensure their appropriateness [48]. The success of these tools is likely to depend on group characteristics and these tools are more susceptible to the influence of general life factors other than illness severity, unlike measurement tools that are disease-specific.

The measures that are condition- or disease-specific are designed to address areas of life that are particularly pertinent for patients with a specific condition or disease in a predefined list of items which must be rated in a particular manner [49]. The limitations of this method of measurement lie in the difficulty of interpreting the responses and its relevance across different diseases. Despite these tools being criticized for having a narrow focus, they have been credited with being more sensitive to changes in health status compared with generic instruments [48]. Individualized measurement tools were developed as an attempt to explore the aspects of life that the individual perceives to be most important and to assess the level of functioning or satisfaction within each aspect [50].

A number of such measures have been developed, such as the Schedule for the Evaluation of Individual Quality of Life, based on direct weighting procedure (SEiQoL-DW), by McGee et al. [51] and O'Boyle et al. [52]; and the Quality of Life Index (QoLI) by Ferrans and Powers [53]. The main advantage of this type of measure of QoL is the ability to address individuals' own concerns about their lives rather than impose standard questions which might be less relevant [44]. There are five main reasons for measuring QoL and HRQoL identified in the literature: (a) it provides an understanding of the

causes and consequences of the difference in QoL and HRQoL among individuals and groups [18]; (b) it helps in assessing the impact of social and environmental factors on QoL and HRQoL [48,54]; (c) it estimates the needs of a target population; (d) it evaluates the effectiveness of health interventions and the quality of any healthcare system [55-57] and (e) it helps in forming clinical decisions [58]. Therefore, measuring overall QoL and HRQoL requires a formal and scientific rigor of assessment in its approach.

Future Direction

Future researchers who examine HRQoL should consider that the terms “QoL”, “life satisfaction”, “functional status” and “wellbeing” cannot be used interchangeably because this causes confusion for both the researcher and the participants whose perceptions they intend to measure. Cultural and language adaptations should also be considered, and more cross-cultural research is needed to examine the relationship between QoL and cultural effects. This might include using individualised QoL instruments to explore the meaning of QoL across cultures. Healthcare providers including nephrologists and nephrology nurses are encouraged to deal with patients from various ethnicities and cultures. Nephrologists and nephrology nurses should utilise cross cultural knowledge and culturally sensitive skills in providing and maximising good patient care outcomes. They need to understand that HRQoL is important in improving renal care services and focus on the development and application of clear concepts that look into psychosocial aspects of care, like emotional status, and social involvement.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest

The study required no approved by the Scientific Research Committee at the Royal Hospital, Muscat, Oman.

Consent for publication

All authors have agreed to the publication and to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Author contribution statement

All authors have contributed equally

Data availability statement

No data provided for this study.

Informed consent

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Conflict of interest

Authors declare no conflict of interest.

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48. Hall T, Krahn GL, Horner-Johnson W, Lamb G, Rehabilitation Research and Training Center Expert Panel on Health Measurement (2011) Examining functional content in widely used health-related quality of life scales. *Rehabil Psychol* 56: 94-99.
49. Bergland A, Narum I (2007) Quality of life: Diversity in content and meaning. *Critical Reviews in Physical and Rehabilitation Medicine* 19: 115-139.
50. Tavernier SS, Totten AM, Beck SL (2011) Assessing content validity of the patient generated index using cognitive interviews. *Qual Health Res* 21: 1729-1738.
51. McGee HM, O'Boyle CA, Hickey A, O'Malley K, Joyce CR (1991) Assessing the quality of life of the individual: The SEIQoL with a healthy and a gastroenterology unit population. *Psychol Med* 21: 749-759.
52. Joyce C, O'boyle C, McGee H (1999) *Individual quality of life: Approaches to conceptualisation and assessment*. Taylor & Francis, Oxfordshire, UK.
53. Ferrans CE, Powers MJ (1985) Quality of life index: Development and psychometric properties. *ANS Adv Nurs Sci* 8: 15-24.
54. Bullinger M, Brütt AL, Erhart M, Ravens-Sieberer U, BELLA Study Group (2008) Psychometric properties of the KINDL-R questionnaire: Results of the BELLA study. *Eur Child Adolesc Psychiatry* 1: 125-132.
55. Burckhardt CS, Anderson KL (2003) The Quality of Life Scale (QOLS): Reliability, validity, and utilization. *Health and quality of life outcomes* 1: 60.
56. Clark EH (2004) Quality of life: A basis for clinical decision-making in community psychiatric care. *J Psychiatr Ment Health Nurs* 11: 725-730.
57. Chwalisz K (2008) The future of counselling psychology: Improving quality of life for persons with chronic health issues. *The Counselling Psychologist* 36: 98-107.
58. Greenhalgh J, Long AF, Flynn R (2005) The use of patient reported outcome measures in routine clinical practice: Lack of impact or lack of theory? *Soc Sci Med* 60: 833-843.

Appendix

Author (year)	Category	Purpose and Context	Participant Characteristics (if any)	Main Findings and Limitations
(Meeberg 1993)	A concept analysis paper	Purpose: To clarify the concept of QoL for further use. Context: Health care Setting: - Country: Canada	-	<ul style="list-style-type: none"> A clarified definition of QoL is proposed, as “QoL is a feeling of overall life satisfaction, as determined by the mentally alert individual whose life is being evaluated”. Individual’s living conditions should meet their basic life needs. QoL both subjective and objective components.
(Man Cheung, Killingworth et al. 1997)	A concept analysis paper	Purpose: To examine briefly the concept of QoL by using some philosophical thoughts, particularly those from Ludwig Wittgenstein (1889-1951). Context: Health care Setting: - Country: UK	-	<ul style="list-style-type: none"> Authors believe that QoL concept is humanly-made arbitrary products. Health care researchers should remain critical about the usage of QoL concepts and keep re-examining them. This study look at such topic with new perspectives which generate new insights. Philosophy has a role to play in understanding some issues in health care research.
(Haas 1999)	A concept analysis paper	Purpose: To analyse how the concept of QoL is currently being defined and used within health care. Context: Health care Setting: - Country: USA	-	<ul style="list-style-type: none"> The analysis supports the theorists who advocate QoL’s comprising subjective and objective indicators. Future efforts are required in developing an understanding of QoL to be directed towards two major areas: (a) the concepts of QoL must be further refined and opposing conceptual perspectives must be resolved; (b) the differentiation of QoL from closely related concepts such as well-being, life satisfaction, functional status and health status.
(Dupuis, Le May et al. 2003)	Systematic review paper	Purpose: (a) To identify the most frequently used HRQoL models and (b) critique those models Context: Health care Setting: - Country: USA	-	<ul style="list-style-type: none"> The most frequently used HRQoL models were: Wilson and Cleary (16%), Ferrans and Colleagues (4%), or WHO (5%). Ferrans and colleague’s model was a revision of Wilson and Cleary’s model and appeared to have the greatest potential to guide future HRQoL research and practice. Search strategy were limited to selected databases (Pub Med, MEDLINE, CINAHL and Psych INFO) and limited time of 10 years. Most of analysed articles were descriptive, correlational or literature reviews.
(Schalock 2004)	A discussion paper	Purpose: To summarise the current understanding of the construct of individual QoL (as spate from family or health related) as it pertains to persons with intellectual disabilities. Context: Health care Setting: - Country: USA	-	<ul style="list-style-type: none"> Currently, QoL is an important concept in service delivery principle, along with its current use and multidimensional nature. QoL researchers beginning to understand the importance of methodological pluralism in the assessment of QoL, the multiple uses of quality indicators, the predictors of assessed QoL, the effects of different data collection strategies and the etic (universal) and Emic (culture-bound) properties of the construct. Yet to understand fully the use of QoL-related outcomes in programme change, how to best evaluate the outcomes of QoL-related services.
(Moons, Budts et al. 2006)	A discussion paper	Purpose: To present an overview and critique of different conceptualisation of QoL, with the ultimate goal of making QoL a less ambiguous concept. Context: Health care Setting: - Country: Belgium	-	<ul style="list-style-type: none"> Defining QoL in terms of life satisfaction is most appropriate because this definition successfully deals with all the conceptual problems discussed within this paper. It is recommended that researchers and theorists can initiate conceptual debates with the aim of making QoL a less ambiguous concept.
(Camfield and Skevington 2008)	Literature review paper	Purpose: To review literatures that could improve understanding about the relationship between conceptualisations of QoL and subjective well-being. Context: Health psychology Setting: - Country: UK	-	<ul style="list-style-type: none"> The definition of subjective well-being derived by an expert panel displays high convergence with an international definition of QoL. Cross-cultural evidence showed that subjective well-being and QoL contained a substantial component of life satisfaction. Increased material resources (objective factors) do not directly lead to improvements in subjective well-being, however might influence some of subjective factors. Social capital acts as a buffer to poor QoL and subjective well-being in poorer communities.
(Murphy and Murphy 2006)		Purpose: To compare QoL in individuals with server mental illness against a sample of the general population and to investigate the role of self-esteem, self-efficacy and social functioning. Context: Mental health	-	<ul style="list-style-type: none"> Significant differences found between clinical and non-clinical groups in four domains of the QHOQOL-100 and in a majority of the aspects within domains. Participants with mental illness have similar need to a normal population in terms of social support and social networks. Some key variance exist between the samples in terms of age, employment, marital status and education.

Appendix 1: Results of the articles analysed by QoL concept.

Study Title	Reasons for Exclusion
Abellan-Perpifan, J.-M. and J.-L. Pinto-Prades (2005). "Measuring the health of populations: the veil of ignorance approach." Health Economics 14(1): 69-82.	Economical paper
Acton, G. J. and P. Malathum (2000). "Basic Need Status and Health-Promoting Self-Care Behavior in Adults." Western Journal of Nursing Research 22(7): 796-811.	Not related to QoL
Ashby, M., et al. (2005). "Renal dialysis abatement: lessons from a social study." Palliative Medicine 19(5): 389-396.	A summary article
Bennett, K., et al. (1991) Methodologic challenges in the development of utility measures of health-related quality of life in rheumatoid arthritis. Controlled Clinical Trials 12, 118s-128s.	Methodology paper
Berger-Schmitt, R. (2002). "Considering social cohesion in quality of life assessments: concept and measurement." Social Indicators Research 58(1-3): 403-428.	Focus on social cohesion
Bonner, A. and J. Greenwood (2006). "The acquisition and exercise of nephrology nursing expertise: A grounded theory study." Journal of Clinical Nursing 15(4): 480-489.	Focus on exercise
Bournes, D. A. (2000). "Concept inventing: a process for creating a unitary definition of having courage." Nursing Science Quarterly 13(2): 143-149.	Focus on courage concept
Brander, P., et al. (2004). "Living with a terminal illness: patients' priorities." Journal of Advanced Nursing 45(6): 611-620.	Not related to QoL
Brazier, J. and M. Deverill (1999). "A checklist for judging preference-based measures of health related quality of life: learning from psychometrics." Health Economics 8(1): 41-51.	Methodological study
Brooks, N. (2000). "Quality of life and the high-dependency unit." Intensive and Critical Care Nursing 16(1): 18-32.	Focus on high-dependency unit
Brush, B. L., et al. (2011). "Overcoming: A Concept Analysis." Nursing Forum 46(3): 160-168.	Methodological paper
Bullinger, M., et al. (2008). "Psychometric properties of the KINDL-R questionnaire: results of the BELLA study." European Child & Adolescent Psychiatry 17(1): 125-132.	Methodological study
Burnes, B. and B. Cooke (2012). "Kurt Lewin's Field Theory: A Review and Re-evaluation." International Journal of Management Reviews.	No abstracts
Calvin, A. O. and L. R. Eriksen (2006). "Assessing advance care planning readiness in individuals with kidney failure." Nephrology Nursing Journal: Journal Of The American Nephrology Nurses' Association 33(2): 165-170.	Not related to QoL
Candow, D. G. (2011). "Sarcopenia: Current theories and the potential beneficial effect of creatine application strategies." Biogerontology 12(4): 273-281.	No abstract
Carlesso, L. C., et al. (2012). "Reflecting on whiplash associated disorder through a QoL lens: An option to advance practice and research." Disability and Rehabilitation 34(13): 1131-1139.	No abstract
Carvalho, A. F., et al. (2013). "The psychological defensive profile of hemodialysis patients and its relationship to health-related quality of life." The Journal Of Nervous And Mental Disease 201(7): 621-628.	Focus on psychological defensive profile
Cella, D., et al. (2005). "Defining higher order dimensions of self-reported health: further evidence for a two-dimensional structure." Evaluation & the Health Professions 28(2): 122-141.	General review
Chwalisz, K. (2008). "The Future of Counseling Psychology: Improving Quality of Life for Persons With Chronic Health Issues." The Counseling Psychologist 36(1): 98-107.	Focus on counselling
Cicerchia, A. (1996). "Indicators for the measurement of the quality of urban life. What is the appropriate territorial dimension?" Social Indicators Research 39(3): 321-358.	Related to environment
Claes, C., et al. (2012). "The influence of supports strategies, environmental factors, and client characteristics on quality of life-related personal outcomes." Research in Developmental Disabilities 33(1): 96-103.	Focus on intellectual disability
Clark, E. H. (2002). Quality of life: psychiatric nurses hearing the voices of individuals with severe mental illness, University of Maine. Ph.D.: 194 p.	Focus on mental illness
Corcoran, M. A. (2007). "Defining and Measuring Constructs." The American Journal of Occupational Therapy 61(1).	Relevant to inclusion criteria
Cote, I., et al. (2000) Health-related quality-of-life measurement in hypertension. A review of randomised controlled drug trials. Pharmacoeconomics 18, 435-450	Describes the instruments of HRQoL
Crosby, R. D., et al. (2003) Defining clinically meaningful change in health-related quality of life. Journal of Clinical Epidemiology 56, 395-407	Clinical relevance
Cudney, S., et al. (2003). "Management of chronic illness: voices of rural women." Journal of Advanced Nursing 44(6): 566-574.	Focus on chronic illness management
Curran, D., et al. (2002). "Analysing longitudinal continuous quality of life data with dropout." Statistical Methods in Medical Research 11(1): 5-23.	Focus on statistical issues
Debout, C. (2011). "The concept of quality of life in healthcare, a complex definition]." Soins: La Revue de Reference Infirmiere(759): 32-34.	Relevant to inclusion criteria (article in French Language)
Diener, E., et al. (2013). "Theory and Validity of Life Satisfaction Scales." Social Indicators Research 112(3): 497-527.	Focus on satisfaction scale
Dyess, S. M. (2011). "Faith: a concept analysis." Journal of Advanced Nursing 67(12): 2723-2731.	Relevant to inclusion criteria
Ebrahim, S. H., et al. (2007) Reporting on health-related quality of life in Cochrane reviews - a challenge for authors? [abstract]. XV Cochrane Colloquium; 2007 Oct 23-27; Sao Paulo, Brazil 116-117	Relevant to inclusion criteria (still under review)
Eckersley, R. (2013). "Subjective Wellbeing: Telling Only Half the Story: A Commentary on Diener et al. (2012). Theory and Validity of Life Satisfaction Scales. Social Indicators Research." Social Indicators Research 112(3): 529-534.	Commentary paper
Fang, J., et al. (2011). "The response scale for the intellectual disability module of the WHOQOL: 5-point or 3-point." Journal of Intellectual Disability Research 55(6): 537-549.	Focus on disability module
Farsides, B. and R. J. Dunlop (2001). "Is there such a thing as a life not worth living? Measuring quality of life." British Medical Journal 322(7300): 1481-1483.	Focus on termination of pregnancy
Ferrin, J. M., et al. (2011). "Psychometric validation of the Multidimensional Acceptance of Loss Scale." Clinical Rehabilitation 25(2): 166-174.	Focus on loss scale
Fetherman, D. L., et al. (2011). "A pilot study of the application of the transtheoretical framework during strength training in older women." Journal of Women and Aging 23(1): 58-76.	Focus on strength training
Fink, A. M. (2009). "Toward a new definition of health disparity: a concept analysis." Journal of Transcultural Nursing 20(4): 349-357.	Focus on health disparity
Fleming, S. and D. S. Evans (2008). "The concept of spirituality: its role within health promotion practice in the Republic of Ireland." Spirituality & Health International 9(2): 79-89.	Relevant to inclusion criteria

Flynn, R., et al. (2005). "The use of patient reported outcome measures in routine clinical practice: lack of impact or lack of theory?" <i>Social Science & Medicine</i> 60(4): 833-843.	Focus on clinical decision making
Frankel, A. (2009). "Nurses' learning styles: promoting better integration of theory into practice." <i>Nursing times</i> 105(2): 24-27.	Relevant to inclusion criteria
Frisch, M. B. (2013). "Evidence-Based Well-Being/Positive Psychology Assessment and Intervention with Quality of Life Therapy and Coaching and the Quality of Life Inventory (QOLI)." <i>Social Indicators Research</i> 114(2): 193-227.	No sufficient data provided
Gall, T. L., et al. (2011). "Spirituality and Religiousness: A Diversity of Definitions." <i>Journal of Spirituality in Mental Health</i> 13(3): 158-181.	Relevant to inclusion criteria
Ghylin, K. M., et al. (2008). "Clarifying the dimensions of four concepts of quality." <i>Theoretical Issues in Ergonomics Science</i> 9(1): 73-94.	Focus on industry quality
Gibson, B., et al. (2005). "Variation and change in the meaning of oral health related quality of life: a "grounded" systems approach." <i>Social Science & Medicine</i> 60(8): 1859-1868.	Focus on oral health quality of life
Gill, L., et al. (2010). "Transitional aged care and the patient's view of quality." <i>Quality in Ageing & Older Adults</i> 11(2): 5-18.	Focus on health service quality
Gillison, F. B., et al. (2006). "Relationships among adolescents' weight perceptions, exercise goals, exercise motivation, quality of life and leisure-time exercise behaviour: A self-determination theory approach." <i>Health Education Research</i> 21(6): 836-847.	Focus on adolescent's weight
Giordano, G. N., et al. (2012). "Social capital and self-rated health – A study of temporal (causal) relationships." <i>Social Science & Medicine</i> 75(2): 340-348.	Focus on social capital role
González, A., et al. (2012). "Motivational and emotional profiles in university undergraduates: A self-determination theory perspective." <i>Spanish Journal of Psychology</i> 15(3): 1069-1080.	No abstract
Hagerty, M. R., et al. (2001). "Quality of life indexes for national policy: review for research." <i>Social Indicators Research</i> 55(1): 1-96.	Focus on life indexes
Hallinen, T., et al. (2009). "Costs and quality of life effects of the first year of renal replacement therapy in one Finnish treatment centre." <i>Journal Of Medical Economics</i> 12(2): 136-140.	Focus on renal transplant
Halvari, A. E. M., et al. (2013). "Oral health and dental well-being: Testing a self-determination theory framework." <i>Journal of Applied Social Psychology</i> 43(2): 275-292.	Focus on oral health
Hanestad, B. R. (1996). "Nurses' perceptions of the content, relevance and usefulness of the quality of life concept in relation to nursing practice." <i>Vardi Norden</i> 16(1): 17-21.	Not relevant to inclusion criteria
Hawthorne, G. (2009). "Assessing utility where short measures are required: development of the short Assessment of Quality of Life-8 (AQoL-8) instrument." <i>Value In Health: The Journal Of The International Society For Pharmacoeconomics And Outcomes Research</i> 12(6): 948-957.	Methodological paper
Herbert, R. J., et al. (2009). "A systematic review of questionnaires measuring health-related empowerment." <i>Research & Theory for Nursing Practice</i> 23(2): 107-132.	focus on health related empowers
Hiemstra, M., et al. (2012). "Smoking-specific communication and children's smoking onset: An extension of the theory of planned behaviour." <i>Psychology and Health</i> 27(9): 1100-1117.	Focus on children population
Holt, J. (2000). "Exploration of the concept of hope in the Dominican Republic." <i>Journal of Advanced Nursing</i> 32(5): 1116-1125.	Focus on Dominican republic
Ismael, S. T. (2002). "A PAR approach to quality of life: frame working health through participation." <i>Social Indicators Research</i> 60(1-3): 41-54.	Focus on Canadian government health vision
Jalowiec, A., et al. (2007). "Predictors of Perceived Coping Effectiveness in Patients Awaiting a Heart Transplant." <i>Nursing Research</i> 56(4): 260-268.	Focus on predictors
Johnson, M., et al. (2012). "Professional identity and nursing: Contemporary theoretical developments and future research challenges." <i>International Nursing Review</i> 59(4): 562-569.	Focus on professional identity
Johnson, M. E., et al. (2007). "Measuring spiritual quality of life in patients with cancer." <i>Journal of Supportive Oncology</i> 5(9): 437-442.	Focus on spiritual domain
Julkunen, J. and R. Ahlstrom (2006). "Hostility, Anger, and Sense of Coherence As Predictors of Health-Related Quality of Life. Results of an ASCOT Substudy." <i>Journal of Psychosomatic Research</i> 61(1): 33-39.	Focus on predictors
Kaasa, S. and J. H. Loge (2003). "Quality of life in palliative care: principles and practice." <i>Palliative Medicine</i> 17(1): 11-20.	Focus on principles and practice
Kemmler, G., et al. (2010) A new approach to combining clinical relevance and statistical significance for evaluation of quality of life changes in the individual patient. <i>Journal of Clinical Epidemiology</i> 63, 171-179	Clinical relevance
kritsonis, a. (2005). "comparison of change theories." <i>International journal of scholarly academic intellectual diversity</i> 8(1): 3-7.	Focus on change theory
Krueger, J. I., et al. (2013). "Comparisons in research and reasoning: Toward an integrative theory of social induction." <i>New Ideas in Psychology</i> 31(2): 73-86.	No abstracts
Lach, L. M., et al. (2006). "Health-related quality of life in youth with epilepsy: Theoretical framework for clinicians and researchers. Part I: The role of epilepsy and co-morbidity." <i>Quality of Life Research</i> 15(7): 1161-1171.	Focus on youth population
Lambiri, D., et al. (2007). "Quality of Life in the Economic and Urban Economic Literature." <i>Social Indicators Research</i> 84(1): 1-25.	Focus on economic literature
Lang, H.-C., et al. (2012). "Quality Of Life, Treatments, and Patients' Willingness to Pay for a Complete Remission of Cervical Cancer in Taiwan." <i>Health Economics</i> 21(10): 1217-1233.	Focus on payment preferences
La-Placa, V., et al. (2003). "Defining and using quality of life: a survey of health care professionals." <i>Clinical Rehabilitation</i> 17(8): 865-870.	Focus on health care professionals
Lasseter, J. A. (2009). "Chronic Fatigue: Tired of Being Tired." <i>Home Health Care Management & Practice</i> 22(1): 10-15.	Focus on chronic fatigue
Lemmens, K. M. M., et al. (2008). "Designing patient-related interventions in COPD care: Empirical test of a theoretical framework." <i>Patient Education and Counseling</i> 72(2): 223-231.	Focus on interventions
Leung, K.-f., et al. (2005). "Development and validation of the Chinese Quality of Life Instrument." <i>Health And Quality Of Life Outcomes</i> 3: 26-26.	Methodological study
Lindelöf, N., et al. (2012). "Experiences of a high-intensity functional exercise programme among older people dependent in activities of daily living." <i>Physiotherapy Theory and Practice</i> 28(4): 307-316.	Focus on exercise programme
Lopez, E. D. S., et al. (2005). "Quality-of-Life Concerns of African American Breast Cancer Survivors Within Rural North Carolina: Blending the Techniques of Photovoice and Grounded Theory." <i>Qualitative Health Research</i> 15(1): 99-115.	Describe the blended photo voice method
Mandhouj, O., et al. (2012). "French-language version of the World Health Organization quality of life spirituality, religiousness and personal beliefs instrument." <i>Health And Quality Of Life Outcomes</i> 10: 39-39.	Non-English language

Mann, M., et al. (1986). "OASIS: a new concept for promoting the quality of life for older adults." <i>American Journal of Occupational Therapy</i> 40(Nov 86): 784-786.	Describes a programme located in stores for older people
Mary, D-W. (2011). "Using framework-based synthesis for conducting reviews of qualitative studies." <i>BMC Medicine</i> : 39.	Focus on conducting reviews
Mehrez, A. and A. Gafni (1990). "Evaluating health related quality of life: an indifference curve interpretation for the time trade-off technique." <i>Social Science and Medicine</i> 31(1990): 1281-1283.	Focus on trade-off technique
Mellon, L., et al. (2013). "Factors influencing adherence among Irish haemodialysis patients." <i>Patient Education and Counseling</i> 92(1): 88-93.	Focus on HD influencing technique
Mitchell, G. J. (1990). "The lived experience of taking life day-by-day in later life: research guided by Parse's emergent method." <i>Nursing Science Quarterly</i> 3(1): 29-36.	Focus on lived experience in later life
Montpetit, M. A., et al. (2006). "Adaptive change in self-concept and well-being during conjugal loss in later life." <i>International Journal of Aging & Human Development</i> 63(3): 217-239.	Focus on self-concept on conjugal loss
Moreira-Almeida, A. and H. G. Koenig (2006). "Retaining the Meaning of the Words Religiousness and Spirituality: A Commentary on the WHOQOL SRPB Group's "A Cross-Cultural Study of Spirituality, Religion, and Personal Beliefs As Components of Quality of Life" (62: 6, 2005, 1486-1497)." <i>Social Science & Medicine</i> 63(4): 843-845.	A commentary paper
Mullaney, A. and G. Pinfield (1996). "No indication of quality or equity." <i>Town and Country Planning</i> 65(5): 132-133.	Focus on equity
Mystakidou, K., et al. (1999). "Quality of life as a parameter determining therapeutic choices in cancer care in a Greek sample." <i>Palliative Medicine</i> 13(5): 385-392.	Focus on therapeutic choices
Noll, H. H. (2002). "Towards a European system of social indicators: theoretical framework and system architecture." <i>Social Indicators Research</i> 58(1-3): 47-87.	Focus on European system of social indicators
O'Connell, K. A. and S. M. Skevington (2010). "Spiritual, religious, and personal beliefs are important and distinctive to assessing quality of life in health: A comparison of theoretical frameworks." <i>British Journal of Health Psychology</i> 15(4): 729-748.	Theoretical comparison
Painter, P., et al. (2012). "Effects of modality change on health-related quality of life." <i>Hemodialysis International. International Symposium On Home Hemodialysis</i> 16(3): 377-386.	Focus on dialysis modality change on HRQOI
Pastrana, T., et al. (2008). "A matter of definition - key elements identified in a discourse analysis of definitions of palliative care." <i>Palliative Medicine</i> 22(3): 222-232.	Focus on palliative care
Paterson, B. L., et al. (2001). "Critical analysis of self-care decision making in chronic illness." <i>Journal of Advanced Nursing</i> 35(3): 335-341.	Focus on self-care decision making
Patrick, D., et al. (2005) Meta-analyses and systematic reviews of quality of life outcomes: preliminary results and work in progress [abstract]. XIII Cochrane Colloquium; 2005 Oct 22-26; Melbourne, Australia 127	On-going study
Perlman, R. L., et al. (2005). "Quality of life in chronic kidney disease (CKD): a cross-sectional analysis in the Renal Research Institute-CKD study." <i>American Journal Of Kidney Diseases: The Official Journal Of The National Kidney Foundation</i> 45(4): 658-666.	Comparison study between dialysis treatment
Peruniak, G. S. (2008). "The Promise of Quality of Life." <i>Journal of Employment Counseling</i> 45(2): 50-60.	General paper
Portillo, M. C. (2009). "Understanding the practical and theoretical development of social rehabilitation through action research." <i>Journal of Clinical Nursing</i> 18(2): 234-245.	No sufficient information
Read, J. L., et al. (1987) Measuring overall health: an evaluation of three important approaches. <i>Journal of Chronic Diseases</i> 40, 7s-26s	General review paper
Reininghaus, U. and S. Priebe (2012). "Measuring patient-reported outcomes in psychosis: conceptual and methodological review." <i>The British Journal of Psychiatry</i> 201(4): 262-267.	Focus on outcome in psychosis
Roberts, J. A. and A. Clement (2007). "Materialism And Satisfaction With Over-All Quality Of Life And Eight Life Domains." <i>Social Indicators Research</i> 82(1): 79-92.	Focus on materialism and satisfaction
Royuela, V. and J. Surinach (2005). "Constituents of Quality of Life and Urban Size." <i>Social Indicators Research</i> 74(3): 549-572.	Focus on urban size
Sartorius, N. (1995). "Rehabilitation and quality of life." <i>International Journal of Mental Health</i> 24(1): 7-13.	Focus on rehabilitation
Schunemann, H. J., et al. (2006) Interpreting the results of patient reported outcome measures in clinical trials: the clinician's perspective. <i>Health And Quality Of Life Outcomes</i> 4, 62	Focus on interpreting patient's report
Senzon, S. A. (1999). "Causation related to self-organization and health related quality of life expression based on the vertebral subluxation framework, the philosophy of chiropractic, and the new biology." <i>Journal of Vertebral Subluxation Research (JVSR)</i> 3(3): 1-9.	Focus on causation related to self-organisation
Shaw, C., et al. (2008). "How people decide to seek health care: A qualitative study." <i>International Journal of Nursing Studies</i> 45(10): 1516-524.	Focus on service use
Siegrist, J. (2001). "Stress, ageing and quality of life." <i>European Review</i> 9(4): 487-499.	Focus on stress and aging
Sirgy, M. J. (1998). "Materialism and quality of life." <i>Social Indicators Research</i> 43(3): 227-260.	Focus on materialism
Stuifbergen, A. K., et al. (1990). "Perceptions of health among adults with disabilities." <i>Health Values: The Journal of Health Behavior, Education & Promotion</i> 14(2): 18-26.	Focus on health perception among disabilities
Suh, E. E. (2004). "The framework of cultural competence through an evolutionary concept analysis." <i>Journal of Transcultural Nursing</i> 15(2): 93-102.	Discussion paper
Tayeb, M. A., et al. (2010). "A "good death": perspectives of Muslim patients health care providers." <i>Annals of Saudi Medicine</i> 30(3): 215-221.	Focus on good death
Taylor, C. L. C., et al. (2007). "A social comparison theory analysis of group composition and efficacy of cancer support group programs." <i>Social Science & Medicine</i> 65(2): 262-273.	Focus on support group programme
Thomé, B., et al. (2003). "Home care with regard to definition, care recipients, content and outcome: systematic literature review." <i>Journal of Clinical Nursing</i> 12(6): 860-872.	Focus on definition of home care
Twycross, R. G. (1987). "Quality before quantity - a note of caution." <i>Palliative Medicine</i> 1(1): 65-72.	Focus on the aim of medicine from the cradle to grave
Walker, H., et al. (2012). "Are they worth it? A systematic review of QOL instruments for use with mentally disordered offenders who have a diagnosis of psychosis." <i>British Journal of Forensic Practice</i> 14(4): 252-268.	Focus on instrument specific to mental disorders
Wan, C., et al. (2011). "Development and Validation of the General Module of the System of Quality of Life Instruments for Chronic Diseases and Its Comparison with SF-36." <i>Journal of Pain and Symptom Management</i> 42(1): 93-104.	Methodological study/review two

Wasserman, L. I., et al. (2002). "Concepts of rehabilitation and quality of life: their continuity and differences in modern approaches." International Journal of Mental Health 31(1): 24-37.	Focus on rehabilitation concept in modern approach
Weinert, C., et al. (2008). "Evolution of a Conceptual Framework for Adaptation to Chronic Illness." Journal of Nursing Scholarship 40(4): 364-372.	Focus on evaluation of conceptual framework
Wiesmann, U., et al. (2008). "Dimensions and profiles of the generalized health-related self-concept." British Journal of Health Psychology 13(Pt 4): 755-771.	Focused on self-concept
Wood, A. M., et al. (2010). "Gratitude and well-being: A review and theoretical integration." Clinical Psychology Review 30(7): 890-905.	Focus on gratitude.
Yin, M. S. (2013). "Fifteen years of grey system theory research: A historical review and bibliometric analysis." Expert Systems with Applications 40(7): 2767-2775.	Discussion paper
Young, Y., et al. (2009). "Can successful aging and chronic illness coexist in the same individual? A multidimensional concept of successful aging." Journal of the American Medical Directors Association 10(2): 87-92.	Focus on aging concept

Appendix 2: Shows the excluded articles with the reasons.

Author	Country	Methodology			Results
		Design/Sampling Method	Size and Characteristics of Sample	Measure	
Abdel-Kader et al (2009)	USA	Cross-sectional design	151 patients undergoing peritoneal or haemodialysis.	SEiQOL-DW	Family and health were the most common domain for patients. No significant differences in SEiQOL-DW scores between subgroups. SEiQOL-DW scores correlated mental wellbeing ($r = -.22, p < 0.010$).
Bailey et al (2007)	USA	Cross-sectional	332 psychology and business students from Baylor University	Trait Hope Scale, and Quality of life Inventory (QOLI)	The internal reliabilities of both scales were above 0.70. Alphas for the scales were: Hope scale= 0.79 and QOLI= 0.73.
Fagerlind et al (2009)	Sweden	A phenomenographic Qualitative design	Semi structured interviews of 22 patients with rheumatoid arthritis	Interviews analysed by using QSR NUD*IST VIVO	Two concepts 'being health' and 'being able to function normally' overlapped with respondents understanding of QoL.
Garratt et al (1993)	UK	Observational study, postal questionnaire to check if SF-36 is a suitable measure for routine use within the NHS.	1700 patients with one of four conditions (low back pain, menorrhagia, suspected peptic ulcer, varicose veins)	SF-36	The SF-36 satisfied rigorous psychometric criteria for validity and internal consistency. Internal consistency (0.55-0.78) Validity (factor analysis identified 5 relevant factors with eigenvalues 12.8 to 1.3
Huber et al (2010)	USA	Cross-sectional design	278 women with HIV disease	Chronic Illness Quality of Life Ladder (CIQOLL)	All internal consistency alpha coefficients were (0.91-0.95). Inter-item correlations ($r=0.30-0.70$).
Kerthong et al (2008)	Thailand	Cross-sectional design	A stratified four-stage random sampling of 422 heart-failure patients	Enhancing Recovery in Coronary Heart Disease Social Support Instrument; Cardiac Symptom Survey; the New York Heart Association functional classification system; and a 100-mm horizontal visual analogue scale of GHP.	Wilson and Cleary's HRQoL fit well with the empirical data ($X^2=19.87, df=13, p=0.10, GFI=0.99, \text{ and } RMSEA=0.04$). Symptom status was the most influential factor affecting HRQoL and social support was the least influential factor affecting HRQoL.
Kurpas et al (2012)	Poland	Cross-sectional design	131 advanced age patients with chronically ill primary care	WHOQoL-bref	Highest score was on social relationship ($M= 12.38 \pm 2.75$) and lowest was in the psychological domain ($M= 12.38 \pm 2.66$)
Murphy H & Murphy E (2006)	UK	Comparative observational study	104 participants 52 mental health service users 20 general population	WHOQOL-100	Significant differences between the two groups in 4 domains of the WHOQoL (independence and social relationships $t=12.150, p<0.001$ and $t=7.252, p<0.001$)
O'Boyle et al (1992)	Ireland	Prospective study (6 months)	20 patients undergoing unilateral hip-replacement	SEiQOL	Health status significantly improved by hip replacement ($p<0.001$)
Prince P & Gerber G (2001)	Canada	Qualitative study	Convenience sample of 36 patients serious mental illness	SEiQOL-DW	The SEiQOL-DW well accepted measure. The SEiQOL-DW global index (69.04, $SD=24.58$) was correlated with the satisfaction with life scale (SWLS) (20.97, $SD= 8.33$).
Rao et al (2008)	USA	Cross-sectional design	898	Functional assessment of cancer therapy-general (FACT-G)	Subscale scores: Physical wellbeing: $p<0.001$ Social wellbeing: $p<0.001$ Emotional wellbeing: $p<0.001$

Rudolf & Priebe (1999)	German	Longitudinal study. Interview within the first three weeks of admission	185 women (42 women with depression, 70 women with alcoholism, 73 women with Schizophrenia)	SQOL	Depressive women after admission express low SQOL ((sub-scale: anxiety/depression [r: -.40, p<0.05], activation [r: -.40, p<0.05], thought disorder [r: -.46, p<0.01])
Saban et al (2007)	USA	Longitudinal one-group Pilot study	57 patients undergoing elective lumbar spinal surgery	SF-36	HRQoL significantly improved postoperatively (t[56] = 6.45, p<.01).
Seongkum et al (2008)	Canada	Qualitative design	Convenience sample of 20 patients	Interviews guided by a set of questions to standardise the content of interview	Patient's definition of QoL their active pursuit of happiness and relationships with others. Patient's self-evaluation of QoL reflected their adopted perception to their changed clinical condition and their positive outlook.
Soaban et al (2008)	USA	Prospective observational study	322 veterans receiving HD	SF-6D KDCS	The SF-6D correlated .911 (p<.05), indicating 83% of the variance in the 7-sub-scales of KDCS measure.
Souse K & Kwok O (2006)	USA	Cross-sectional	917 HIV patients	AIDS-specific symptoms scale	The range of correlations (n=917) for the composites of each domain were: symptom status, 0.27-0.56; functional health, 0.77-0.97; general health perception, 0.81; and overall QoL, 0.70.
Souse K & Williamson A (2003)	USA	Longitudinal design (3 years)	99 patients were presenting to the emergency department	SF-36	Symptom status is a key predictor of HRQoL. The baseline symptom status contributed 20.2% (p=0.001) of the variance explained the baseline physical score, and symptom status at follow-up 23.2% (p= 0.001). symptom status explained the variance in baseline and follow-up mental scores (9.8%, p= 0.001 and 29.2%, p= 0.001)
Soyupek et al (2010)	Turkey	Cross-sectional design	40 patients	Quality of Life Inventory (QOLI)	Self-concept and QoL of these patients were lower (p<0.001).
Sprangers et al (2002)	Netherland	Cross-sectional design	217 consecutive cancer patients in the acute phase of their illness vs 192 disease free cancer patients	Activities of Daily Living Scale	Patient with cancer reported poorer QoL (p<0.001).
Staniszewska et al (1999)	UK	Qualitative study	25 ethnic group (15 Indian patients and 10 white patients)	SF-36	No differences identified between the two groups.
Staniszewska S (1999)	UK	Qualitative study	Semi-structured interviews for 33 cardiac patients to explore the possibility of extending the evaluation of health by patient's expectation concept.	SF-36	Comparison of the content of patient expectations with the SF-36 found some overlap but indicated that patients seemed to adopt a broader approach to their health (internal consistency (0.82 and 0.88)
Tavernier et al (2011)	USA	Qualitative design	Cognitive interviewing to explore patients with cancer understanding of PGI (7 men and 8 women)	PGI	Interview data supported the content validity of the PGI in comprehensively defining and adequately sampling participant HRQoL as an individualised construct.
Tokuda et al (2009)	Japan	Cohort study design	3344 participants (53% women; median age 35 years)	SF-36	One factor was retained (eigenvalue, 4.65; variance proportion 0.58). All item response category characteristic curves satisfied the monotonicity assumption in accurate order with corresponding ordinal responses.
Unruh et al (2003)	USA	Comparative study : self-administered vs interviewer-administered surveys in HD patients	978 HD patients: N= 427 interview survey N= 551 self-administered	KDQOL-SF	The interviewer group: had higher scores on scales that measured role-physical, role-emotional and effects of kidney disease (p<0.001).
Verdugo et al (2012)	Spain	Analyses of the relationship between eight core QoL domains and 34 articles contained in the Convection. (The concept of QoL and its role in enhancing human rights of persons with intellectual disability)	-	-	There is a close relationship between the core QoL domains (independence, social interaction, and wellbeing) and the 34 articles contained in the Convection. Three strategies can be used to enhance human rights of persons with intellectual disability: employ person-centred planning, publish provider profiles and implement as system of support.
Wu. A et al (2004)	USA	Prospective cohort study	Baseline: 698 HD 230 PD 1 year: 452 HD 133 PD	SF-36	Better HRQoL for PD patients (bodily pain, travel, diet restriction, and dialysis access [p<0.05]). At 1 year, SF-36 scores improved. HD patients had greater improvement in domains (physical functioning and general health perception).

Zadeh K & Unruh M (2005)	USA	Cohort study	10,030 dialysis patients	KDQOL-SF	Patients in the lowest quintile of physical score, the adjusted relative risk (RR) of death was 93% higher (RR= 1.93, p<0.001) and the risk of hospitalisation was 56% higher (RR= 1056, p<0.001).
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Appendix 3.1: Shows the summary and results of the empirical studies.

Author	Criteria						
	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN	Yes = ✓ No = × Unclear = UN
	Is the source of opinion/discussion clearly identified?	Does the source of the discussion/ opinion have standing in the field of expertise?	Are the interests of patients/clients the central focus of the opinion?	Is the discussion/ opinion's basis in logic/experience clearly argued?	Is the argument developed analytical?	Is there reference to the extant literature/ evidence and any incongruence with it logically defended?	Is the discussion/ opinion supported by peers?
Anderson & Burckhardt (1998)	✓	✓	✓	✓	✓	✓	✓
Camfield & Skevington (2013)	✓	✓	✓	✓	✓	✓	✓
Carr & Higginson (2001)	✓	✓	✓	✓	✓	✓	✓
Carr et al (2001)	✓	UN	✓	✓	✓	✓	UN
Chung et al (1997)	✓	✓	✓	✓	✓	✓	×
Cohen & Kimmet (2013)	✓	✓	✓	✓	✓	✓	✓
Dijkers M (2006)	✓	✓	✓	✓	✓	✓	✓
Downie R (2000)	✓	✓	✓	✓	✓	✓	✓
Farquhar M (1994)	✓	✓	✓	✓	✓	✓	✓
Felce (1997)	✓	✓	✓	✓	✓	✓	UN
George & Bearon (1980)	✓	✓	UN	✓	✓	✓	✓
Gill T (1995)	✓	✓	✓	✓	✓	✓	×
Gladis et al (1999)	✓	✓	UN	✓	✓	✓	✓
Gokal et al (1999)	✓	✓	✓	✓	✓	✓	✓
Hagerty M (1998)	✓	✓	✓	✓	✓	✓	✓
Hass B (1999)	✓	✓	✓	✓	✓	✓	UN
Hass et al (1999)	✓	✓	UN	✓	✓	✓	×
Hendry & McVittie (2004)	✓	✓	✓	✓	✓	✓	✓
Holmes S (2005)	✓	✓	✓	✓	✓	✓	✓
Koller et al (2005)	✓	UN	✓	✓	✓	✓	×
Meeberg (1992)	✓	✓	UN	✓	✓	✓	UN
Moons et al (2006)	✓	✓	✓	✓	✓	✓	✓
Muldoon et al (1998)	✓	✓	✓	✓	✓	✓	×
Ravenek et al (2013)	✓	✓	✓	✓	✓	✓	✓
Rebollo & Ortega (2002)	✓	✓	✓	✓	✓	✓	✓
Schalok R (2004)	✓	✓	✓	✓	✓	✓	UN
Smith A (2000)	✓	✓	✓	✓	✓	✓	UN
Tienery et al (2007)	✓	✓	✓	✓	✓	✓	✓
Ventegot et al (2003)	✓	✓	✓	✓	✓	✓	✓
Vitterso J (2003)	✓	✓	UN	✓	✓	✓	UN
Zhan L (1991)	✓	✓	✓	✓	✓	✓	✓

Appendix 3.2: Shows the critical appraisal checklist for discussion: Discussion articles. (Adopted from JBI).



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

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