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The Association Between Mutuality and Quality of Life in Adults With Chronic Illnesses and Their Nurses: Actor-Partner Interdependence Model Analysis

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ABSTRACT

Aim: To examine the association between mutuality and quality of life in nurse–patient dyads.

Design: A cross-sectional multi-centre study was conducted.

Methods: The study was conducted in five tertiary hospitals in Italy. We enrol both inpatients and outpatients with chronic diseases and their nurses with a convenience sampling. One-hundred ninety-two dyads participated to the study. A self-assessment instrument including the Short-Form 12 Health Survey (SF-12), and the Nurse Patient Mutuality in Chronic Illness scale (NPM-CI scale), in the two versions—one for patients and one for nurses, was administered. The effects of nurse–patient mutuality on the physical and mental quality of life of nurses and patients were estimated with a series of actor-partner-interdependence models (APIM).

Results: Patients' and nurses' perceptions of their mutuality were positively correlated. For patient mental quality of life, there was a statistically significant actor effect both for patients, and for nurses. There was also a consistent statistically significant partner effect for patient mental quality of life. There were no statistically significant actor or partner effects for the nurses' and patients' physical quality of life. This construct may be influenced by additional components, further studies are needed.

Conclusions: Mutuality between nurses and patients in chronic diseases influence both patient and nurse quality of life.

Implications for the Profession and/or Patient Care: Our results support the importance of taking a dyadic perspective when considering mutuality and quality of life in nurse–patient dyads.

Impact: Nurse–patient mutuality is an indicator of a high-quality relationship, which allows shared goals and shared decision-making. Quality of life is one of the most important outcomes for chronic conditions patients and is an indicator of well-being. Quality of life is also an important variable in healthcare professionals' lives. Little is known about the association between mutuality and quality of life in nurse–patient dyads. Mutuality has an actor effect on patient's and nurse's quality of life and has a negative partner effect on patient's quality of life. The understanding of mutuality and interdependence within the dyad, could increase mental quality of life in nurse–patient dyads.

Reporting Method: STROBE checklist for cross-sectional studies was followed in this study.

Patient or Public Contribution: Patients were involved in the sample of the study.

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Summary

- This study provides a dyadic perspective of mutuality between nurse and patient and its association with quality of life.
- This study highlights the actor effect of mutuality on patient's and nurse's quality of life and a negative partner effect of nurse mutuality on patient's quality of life.
- This offers a model to increase mental quality of life in nurse and patient dyads.

1 | Introduction

The spread of chronic diseases worldwide has become a major public health challenge, significantly impacting both developed and developing countries (Manderson and Jewett 2023; World Health Organization 2023). In fact, chronic diseases (e.g., cardiovascular diseases, cancer, chronic respiratory diseases, diabetes) represent an important challenge for society and healthcare professionals because they are associated with high mortality, high expenditure, and a decrease in quality of life (QOL) (Airhihenbuwa et al. 2021; World Health Organization 2023).

Quality of Life (QoL) is defined as individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns (World Health Organization 2023). QOL includes multiple components, such as physical functioning, social functioning, mental health, and overall health perception (Lin, Lin, and Fan 2013) and is considered one of the most important outcomes for healthcare interventions. Indeed, most of the healthcare research is focused on identifying variables associated with QOL and in looking for interventions aimed at improving QOL (Manderson and Jewett 2023; World Health Organization 2023).

Quality of life is also an important variable in nurses' lives: because nurses are the most numerous healthcare force, and because studies have shown that a worse quality of life of nurses is associated with worse nursing care (Oyama, Yonekura, and Fukahori 2015). Indeed, nurses are exposed to poor QoL and in this field investigators are looking for variables that could influence nurses' quality of life (Kowitlawkul et al. 2019; Lee et al. 2013).

While many studies have investigated factors associated with poor QOL in people affected by chronic diseases and in nurses, few studies have paid attention to the transactional nature of QOL between patients affected by chronic diseases and nurses.

2 | Background

In a conceptual framework recently developed, the transactional nature of patient and nurse QOL was influenced by mutuality (Cilluffo et al. 2022). This framework defined mutuality as an ongoing and reciprocal process encompassing the three dimensions *developing and going beyond*, *point of reference*, and *deciding and sharing care* (Cilluffo et al. 2022). Mutuality between nurse and patient entails trust, equality, reciprocity

and sharing care objectives and the decision-making process (Montori, Kunneman, and Brito 2017; Ozaras and Abaan 2018). Those elements in the mutuality framework are necessary for the developing of mutuality between nurse and patient (Cilluffo et al. 2022). Through the mutuality processes the focus of the relationship between nurse and patient shifts from dependence and imbalance to an egalitarian and shared relationship and patients become the drivers of their health (Brown 2016; Cilluffo et al. 2022). Going beyond stereotypes, nurse become a point of reference for the patient, a trusted member of the healthcare system, and then patient start to share health goals and decision-making process with them. The care pathway become shared, and responsibility increases in both (Cilluffo et al. 2022).

Mutuality can lead to positive outcomes to nurses, patients, and organisations (Brown 2016; Read 2014). This conceptual framework hypothesized different outcomes as increases in the patient's ability to self-care (Cilluffo et al. 2024), quality of life, self-efficacy, and satisfaction with care, and it benefits nurses reducing burnout and increasing job satisfaction and quality of life (Cilluffo et al. 2022). The association between mutuality and quality of life has been hypothesized in the conceptual framework, a better mutuality between nurse and patient could lead to better feeling of being considered more human and equal. Sharing responsibilities and care pathway generates well-being in both, increasing the dyad quality of life (Cilluffo et al. 2022; Errasti-Ibarrondo et al. 2015; Henson 1997). The influence of nurse patient mutuality on their QOL was assumed in the conceptual framework but no studies measured this influence. The association between mutuality and quality of life was investigated in other dyads, such as caregiver-patient dyads (Magasi et al. 2019; Pucciarelli et al. 2021). Between patients and caregivers, a positive effect of mutuality on quality of life was found (Magasi et al. 2019; Pucciarelli et al. 2021).

Researchers are using a dyadic approach to study mutuality between patient and family caregiver because they understood that mutuality is a dyadic phenomenon in which the two actors constitute a team and that the way they relate can influence mutual outcomes (Kayser and Acquati 2019; Zhou et al. 2022). A dyad represents two dynamic systems that interact with each other and form a synergy to work towards the same goal. The two systems work together and self-organise, trying to build something together (Hamer et al. 2022), and they are interdependent within each other (Rusbult and Van Lange 2008). Collaboration between dyadic partners could include care planning in terms of co-creating the plan and actualizing goals of care as a team (Lyons and Lee 2018; Orsulic-Jeras et al. 2019). Nurse patient dyads are studied with respect to bonding associated with satisfaction (Tejero 2012). No studies are present in literature that investigate nurse patient mutuality as a dyadic phenomenon, and its association with quality of life. Dyadic analytical studies are also necessary in this dyad, to investigate the interdependence between nurse and patient.

3 | The Study

3.1 | Aim

The aim of this study is to examine the association between mutuality and quality of life in dyads including adults affected by chronic conditions and their nurses.

4 | Methods

4.1 | Design

A cross-sectional multi-centre study was conducted.

4.2 | Study Setting and Sampling

The study was conducted in five tertiary hospitals in Italy. Data were collected between April 2022 and April 2023 in medical and surgical setting, and outpatients and 235 dyads were enrolled. Convenience sampling was used to enrol both inpatients and outpatients in the study and to enrol nurses working in these areas. The population included in the study consisted of adult patients with chronic illnesses and their nurses which cared by.

4.3 | Inclusion and Exclusion Criteria

The inclusion criteria for patients included being >18 years, having at least one chronic disease, knowing the nurses who were caring for them, willingness to participate and signing the informed consent. Patients with cognitive impairment were excluded. The inclusion criteria for nurses were working for at least 2 years, willingness to participate and signing the informed consent, knowing the patients who were caring by them.

4.4 | Instruments

4.4.1 | Quality of Life

Quality of life was measured with the Short-Form 12 Health Survey (SF-12), which is a self-assessment tool comprising 12 items, derived from the expanded version Short Form 36 (SF-36). Results are expressed in terms of two meta-scores: The Physical Component Summary (PCS) and the Mental Component Summary (MCS). Each of these domains is assessed separately and through an algorithm a score is assigned on 0–100 scale, divisible in bands: poor (0–50), good (51–70), optimal (81–90), excellent (91–100) (Ware, Kosinski, and Keller 1996). The tool has been validated in several studies and in the specific population (Kodralliu et al. 2001; Ware, Kosinski, and Keller 1996). In Italian population factorial analysis confirmed the two dimensions model, and the total variance explained ranged from 58% to 65%. For criterion validity internal and external factors examined resulted strongly and positively associated with PCS-12 (Kodralliu et al. 2001).

4.4.2 | Mutuality

Mutuality was measured with the Nurse Patient Mutuality in Chronic Illness scale (NPM-CI scale), which is a self-assessment tool comprising 20 items rated on a 5-point scale from 1 (never) to 5 (always) (Cilluffo et al. 2023). In this instrument are investigated the presence of reciprocal trust, respect, and equality in the dyad as well as the possibility of emotional expression and the sharing of goals, health concerns, treatment options, care planning, and decision-making. The nurse as a point of reference

and how much the nurse's recommendations are followed by the patient are also included (Cilluffo et al. 2023). The NPM-CI scale has two versions—one for patients and one for nurses. In the current study, we administered both versions to nurses and patients enrolled. The scale has 20 items with higher scores indicating higher mutuality. The measure has been validated in an Italian population of nurses and patients with chronic illnesses, with an exploratory factor analysis that confirms the three dimensions of the concept, the total NPM-CI scale Cronbach's $\alpha = 0.90$ (Cilluffo et al. 2023). The Intraclass Correlation Coefficient for the test-retest reliability was 0.97 (95% confidence interval [CI] 0.91–0.99); $p < 0.001$ (Cilluffo et al. 2023).

Furthermore, we collected data on sociodemographic and clinical characteristics of nurses and patients. For both: age, gender, marital status, education, department setting. For patients: caregiver presence, type of chronic conditions. For nurses: working years as nurses, presence of chronic conditions, and past experiences as patient or cared for illness relatives, to be consistent with the conceptual framework.

4.5 | Data Collection

Participants were recruited by trained data collectors, consisted by 10 research assistants, that were assigned two for each hospitals involved. The training was aimed at identifying the dyads, achieving the greatest number of responses to the questionnaires, and reducing the differences between interviewees and respondents and the amount of missing data.

The sampled patients and nurses were first assessed with respect to the selection criteria and subsequently signed the informed consent. The data were collected in confidential environments, ensuring privacy during compilation and separately between nurses and patients. During compilation, data collectors were available to answer any questions. The questionnaires were completed in approximately 10–15 min. For inpatients, data were collected while they were still hospitalised, at least after 7 days of hospitalisation, to know the nurses cared for them.

4.6 | Data Analysis

To examine the actor and partner effects of nurse–patient mutuality on the physical and mental quality of life of nurses and patients, a series of actor-partner-interdependence models (APIM) were estimated using SPSS mixed models (SPSS version 28.0) (Kenny 2018; Reed, Butler, and Kenny 2013). APIM allows for the simultaneous examination of factors associated with the outcomes of both members of the dyad, controlling for interdependencies. APIM is influenced by Interdependence Theory (Kenny 2018; Rusbult and Van Lange 2008). We ran two linear regressions with mutuality and quality of life in an Actor Partner Interdependence Model, controlling for interdependencies between the actor effects and partner effects. An actor effect refers to the association of one's own perception of mutuality with one's own quality of life (e.g., the patient's perception of nurse–patient mutuality with the patient's mental quality of life). A partner effect refers to the association of one's own perception of mutuality with one's dyadic partner's

quality of life (e.g., the patient's perception of nurse–patient mutuality with their nurse's mental quality of life). Models to examine the actor and partner effects of the total score of nurse–patient mutuality on both physical and mental quality of life of the dyad were run.

These new variables were created from both nurse's and patient's individual reports of mutuality (Cook and Kenny 2005).

4.7 | Bias Control

The data were treated with an interdependent approach, reducing the risk of bias significance tests. Interdependences are controlled for to create unbiased estimates not inflated due to interdependencies.

4.8 | Ethical Consideration

The institutional review board CEMIA3 approved the study with registered number 501–22072021. This study was conducted in accordance with the principles of the Declaration of Helsinki, and all patients provided written informed consent prior to enrolment. The study was not registered.

5 | Results

5.1 | Characteristics of the Sample

Two hundred thirty-five dyads were enrolled, but only 192 were unique dyads and included in the current analysis (81.7%). Eighteen dyads (7.6%) refused to participate in the study due to arguments, and 25 (10.6%) withdrew or did not complete the questionnaire. No participants that concluded the study were excluded from the analysis.

Patients had an average age of 64.5 years ($SD=18.3$), and 107 (55.7%) patients were men. Eighty-three patients (43.2%) had secondary school education, 127 (66.1%) were married and 47 (24.5%) needed a caregiver. One hundred two patients had one (53.1%), 41 (21.4%) had two, 18 (9.4%) had three and 21 (10.9%) had four, and 10 (5.2%) had more than four chronic conditions. The most frequent diseases were hypertension (57.3%), heart failure (47.4%), diabetes (25.5%), renal failure (13.5%), COPD (19.3%), and cancer (16.1%). Forty-nine patients had no prescribed drugs (10.5%), 137 (29.5%) used one prescribed drug, 123 (26.5%) used two drugs, and 156 (33.5%) used three or more drugs; for details, see Table 1.

Nurses had an average age of 41.83 ($SD=15.1$), and 132 (68.8%) were women. One-hundred and thirty (67.7%) worked in inpatients' contexts, 62 (32.2%) worked in outpatients' contexts. Ninety-six nurses (50.0%) had previous experiences as patients themselves, 34 (17.7%) had chronic conditions, and 77 (40.1%) had cared for family members; for details, see Table 1.

Table 2 presents descriptive results and bivariate associations among major study variables in preliminary analyses.

Patients' and nurses' perceptions of their mutuality were positively correlated ($r=0.21$, $p<0.001$). Mental QoL was also correlated within dyads ($r=-0.27$, $p<0.001$). Physical QoL was not correlated within dyads ($r=0.12$, $p=0.86$).

5.2 | Perceptions of Nurse–Patient Mutuality on Patient and Nurse Mental Quality of Life

The results of the APIM examining associations between nurse–patient mutuality and mental quality of life are included in Table 3 and presented in Figure 1.

5.3 | Patient Mental QOL

For patient mental quality of life, there was a statistically significant actor effect for patients. The better the patient perceived mutuality with their nurse, the better their mental quality of life ($B=1.67$, $p<0.001$). There was also a consistent statistically significant partner effect for patient mental quality of life. The better the nurse perceived mutuality with the patient, the worse the mental quality of life of the patient ($B=-2.74$, $p<0.001$).

5.4 | Nurse Mental QOL

For nurse mental quality of life, there was a statistically significant actor effect for nurses. The better the nurse perceived mutuality with their patient, the better their mental quality of life ($B=0.19$, $p=0.002$). There was no statistically significant partner effects for nurse mental quality of life.

5.5 | Perceptions of Nurse–Patient Mutuality on Patient and Nurse Physical Quality of Life

In contrast to the findings for mental quality of life, there were no statistically significant actor or partner effects for the total score of the nurse–patient mutuality for nurses' and patients' physical quality of life. These findings are presented in Figure 1.

6 | Discussion

To the best of our knowledge, this is the first study examining the influence of nurse–patient mutuality on quality of life of both nurses and patients with an actor partner interdependence model. The results of this study suggest that nurse–patient mutuality is associated with mental quality of life of nurses and patients with chronic conditions. The mutuality score for patients is higher than the mutuality score for nurses, as in previous studies (Cilluffo et al. 2024). In other studies, investigating mutuality between patients and family caregivers, the mean of mutuality was found to be higher in patients rather than in caregivers (Dellafiore et al. 2019; Hooker et al. 2018).

Both patients and nurses experienced poor levels of physical and mental health. However, the difference in physical health

TABLE 1 | Sociodemographic and clinical characteristics of the samples.

	Patients (<i>n</i> = 192)	Nurses (<i>n</i> = 192)
Gender <i>N</i> (%)		
Female	85 (44.3%)	132 (68.8%)
Male	107 (55.7%)	60 (31.2%)
Other	0 (0%)	0 (0%)
Age Mean (SD)		
Years	64.5 (SD 18.3)	41.8 (SD 10.7)
Marital status <i>N</i> (%)		
Single	35 (18.2%)	54 (28.2%)
Married	127 (66.1%)	120 (62.6%)
Widow	18 (9.4%)	4 (2.1%)
Divorced	12 (6.3%)	14 (7.1%)
Caregiver assistance		
Yes	145 (75.5%)	—
No	47 (24.5%)	—
Education <i>N</i> (%)		
	Primary education 83 (43.2%)	Bachelor's degree in nursing 192 (100%)
	Secondary education 93 (48.5%)	Post-degree education 65 (33.8%)
	University degree 16 (8.3%)	
Working as nurse Mean (SD)		
Years	—	15.2 (SD 10.6)
Chronic conditions <i>N</i> (%)		
Hypertension	110 (57.3%)	—
Heart disease	91 (47.4%)	—
Diabetes	49 (25.5%)	—
Kidney failure	26 (13.5%)	—
COPD/asthma/emphysema	37 (19.3%)	—
Cancer	31 (16.1%)	—
1 chronic condition	102 (53.1%)	—
2 or more chronic conditions	90 (46.9%)	—
Nurses' experiences as patient <i>N</i> (%)		
Yes	—	96 (50.0%)
No	—	96 (50.0%)
Having chronic conditions <i>N</i> (%)		
Yes	—	34 (17.7%)
No	—	158 (82.3%)

(Continues)

TABLE 1 | (Continued)

	Patients (<i>n</i> = 192)	Nurses (<i>n</i> = 192)
Care for relatives <i>N</i> (%)		
Yes	—	77 (40.1%)
No	—	115 (59.9%)
Department <i>N</i> (%)		
Inpatients	116 (60.4%)	130 (67.7%)
Outpatients	76 (39.6%)	62 (32.3%)

Note: SD, standard deviation.

TABLE 2 | Descriptive statistics and bivariate correlation of mutuality dimensions and self-care behaviours.

Variables	Mean (SD)	Mut pt	PCS pt	MCS pt	Mut RN	PCS RN	MCS RN
Mut tot pt	80.28 (14.0)	1					
PCS pt	40.13 (7.93)	0.14	1				
MCS pt	47.32 (9.71)	0.18*	0.99**	1			
Mut tot RN	78.47 (10.46)	0.21**	−0.24**	−0.24**	1		
PCS RN	50.14 (7.76)	0.003	0.12	0.13	0.014	1	
MCS RN	48.64 (8.75)	−0.001	−0.28**	−0.27**	0.20*	0.11	1

Abbreviations: MCS pt = mental quality of life of patients; MCS RN = Mental quality of life of nurses; Mut tot pt = total mutuality score of patients; Mut tot RN = total mutuality score of nurse; PCS pt = physical quality of life of patients; PCS RN = Physical quality of life of nurses.

**p* < 0.001.

***p* < 0.01.

TABLE 3 | SPSS mixed models examining actor and partner effects of nurse–patient mutuality on mental quality of life of patients and nurses (*N* = 192 dyads).

Model 1: Mutuality total score	Patient mental QoL			Nurse mental QOL		
	B	SE	<i>p</i>	B	SE	<i>p</i>
Actor nurse–patient mutuality	1.66	0.49	< 0.001	0.19	0.06	0.002
Partner nurse–patient mutuality	−2.74	0.66	< 0.001	−0.031	0.05	0.502

between nurses and patients is important and certainly related to the physical conditions that patients had. For mental quality of life, the difference between nurses and patients was very little, demonstrating that nurses often experience poor mental quality of life. Differences between nurses' and patients' quality of life could also be related to the age and gender of both patients and nurses. Patients in the sample had an average age above 60 years and the majority were men; nurses were primarily women with an average age of 41 years. Also, research has shown that younger women are more likely to share their thoughts about their perceived mental health (Seven et al. 2021).

Patients' and nurses' reports were positively correlated for mutuality, the higher the nurse's mutuality, the higher the patient's mutuality, which is consistent with previous literature on patient and family caregiver mutuality (Hooker et al. 2015). Mental quality of life was negatively correlated within dyads, and this is consistent with the results of the partner effect for patients' mental quality of life. Not surprisingly, physical quality of life

within dyads was unrelated, due to the multi-dimensional nature of physical quality of life and the differing factors that may influence physical quality of life for each member of the nurse–patient dyad.

In our study, using a dyadic analysis, we demonstrate that mutuality is associated with both patients' and nurses' mental quality of life. Patient level of mutuality influences patient mental quality of life, with better reports of the quality of the relationship by patients being associated with better mental quality of life for them. The same positive association was found for nurses; the better reports of the quality of the relationship by nurses being associated with better mental quality of life for them. These findings are consistent with previous literature (Boscart et al. 2016) and with the conceptual framework (Cilluffo et al. 2022). Moreover, research focused on patient–informal caregiver dyads found that mutuality between patients and caregivers has a statistically significant protective, actor effect on patient depression and anxiety (Dellafiore et al. 2019).

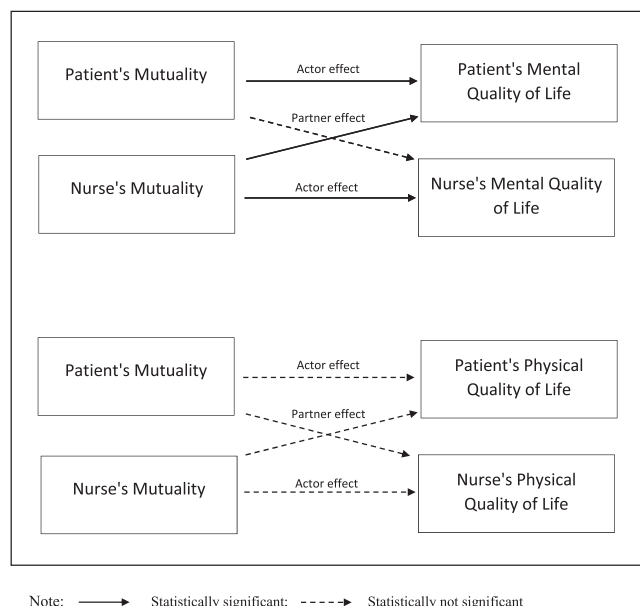


FIGURE 1 | Actor and partner effects of mutuality on mental and physical quality of life.

Moreover, our dyadic approach also found important partner effects; nurses' reports of mutuality with the patient were significantly associated with patients' mental quality of life. The better the nurse perceived mutuality with the patient, the worse the mental quality of life reported by the patient. Although this result may appear counterintuitive, we cannot speak about cause-effect relationship between nurses' perception of mutuality and patient mental quality given the cross-sectional nature of the study. It could be that nurses adopt more reciprocal and supportive behaviours when patients are more dependent. These patients go through emotional difficulties and challenges that can affect their quality of life. Therefore, nurses would be more mutual with patients with lower quality of life. It is very possible that nurses in the current study were more engaged and felt higher levels of mutuality when patients were more in need of emotional support. Clearly, further studies, particularly longitudinal studies are needed. This finding may not appear to be consistent with previous research, reporting that nurses tend to assume a worse attitude in the relationship with patients with lower mental quality of life (Qtaib et al. 2016). However, is important to say that the measurement and the concept of mutuality in the current study comprehend more than attitudes towards patients. Rather, it encompasses behaviours and feelings of reciprocity. Furthermore, some research on family caregiving has also found counterintuitive results that may imply that high levels of mutuality may not always be associated with better mental health in the partner but may represent a more complex experience. For example, high levels of mutuality may lead to poor mental health and increased caregiving stress in the family caregiver due to increased involvement and worry with the patient's health status (Lyons et al. 2009, 2014).

The results did not demonstrate an association between mutuality and physical quality of life. The physical quality of life of nurses was particularly low and is probably a very complex construct that depends on technical and physical components

of daily work such as workload and availability of aids during work (Jathanna, and D'Silva, J. 2014; Sun et al. 2023). The physical quality of life of patients is probably largely determined by the clinical condition and the course of chronic disease (Cheng et al. 2020; Megari 2013). Further studies should be carried out.

6.1 | Implications for Policy and Practice

In clinical practice mutuality may have an impact on patients' and nurses' quality of life, nurses must recognise the important impact of mutuality in their relationship with patients and on their quality of life. Healthcare management must consider that nurses have poor quality of life, both mental and physical, risking burnout and high levels of leaving (Kowitlawkul et al. 2019). Mutuality has an impact on their mental quality of life, and for this reason, managers and nurses must invest on models of care focused on a better nurse–patient relationship approach (Oyama, Yonekura, and Fukahori 2015). Since mutuality affect nurses' mental quality of life and since nursing students and future nurses struggle remaining in the profession, having a mutuality-based approach in education could reduce the intent to leave the profession (Kowitlawkul et al. 2019; Lee et al. 2013). Interventions focused on enhancing mutuality should be implemented and healthcare teams should focus on targeted education, coping, and social support interventions to increase patients' quality of life (Cole, Ridings, and Phillips 2024).

6.2 | Recommendations for Further Research

This was the first study with a dyadic approach to mutuality between nurse and patient. It will be important to explore the dyadic influencing factors that may contribute to the dyadic concept of mutuality (Lyons and Lee 2018). Also, it will be necessary to explore how mutuality changes and affects quality of life over time in nurse–patient dyads. The nurse mutuality partner effect on patients' quality of life will need further exploration. Mental quality of life of both patient and nurse seems to be related to mutuality and this relationship could be investigated with an interventional study to improve itself.

6.3 | Strength and Limitations of the Work

This was the first study exploring the actor partner effect of nurse–patient mutuality on quality of life. To examine the actor and partner effects of nurse–patient mutuality on the physical and mental quality of life of nurses and patients, we used a series of actor-partner-interdependence models allowing the simultaneous examination of factors associated with the outcomes of both members of the dyad and controlling for interdependencies. Our results support the importance of taking a dyadic perspective when considering mutuality and quality of life in nurse–patient dyads.

This study has some limitations. First, it used a cross-sectional design, consistently with a theoretical-deductive approach, in fact the mutuality conceptual framework drove the research questions. However, in future studies it would be appropriate to use a longitudinal design to further explore and understand the association between mutuality and health related quality of life over time.

In addition, the sampling method was a convenience sampling, and the sample size is representative of one single population and culture, and this may affect the generalisation of the results. Further studies on samples belonging to different peoples and cultures would be appropriate. Moreover, further studies with a randomised sampling method could increase the generalisation of the results.

7 | Conclusions

Mutuality between nurse and patient is a relevant concept in the dyadic management of chronic diseases. The results of this study confirm that nurse–patient mutuality in chronic disease influence both patient and nurse health related quality of life. The better understanding of mutuality and interdependence could help facilitate better mental quality of life and better health and well-being outcomes in nurse and patient dyads. Our results support the importance of taking a dyadic perspective when considering mutuality and quality of life in nurse–patient dyads.

Mutuality has an impact on nurses' and patients' mental quality of life and for this reason, clinical practice, healthcare management and education, must invest on models of care with a better nurse–patient relationship approach.

Author Contributions

Cilluffo Silvia – conceptualization, data curation, formal analysis, investigation, methodology, project administration, writing original draft. Lyons S. Karen – conceptualization, supervision, methodology, writing review & editing. Bassola Barbara – supervision, writing original draft, writing review & editing. Vellone Ercole – investigation, writing review & editing. Pucciarelli Gianluca – investigation, writing review & editing. Clari Marco – investigation, writing review & editing. Dimonte Valerio – investigation, writing review & editing. Lusignani Maura – conceptualization, supervision, writing review & editing.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Disclaimer

The authors have checked to make sure that our submission conforms as applicable to the Journal's statistical guidelines. There is a statistician on the author team. The author is Karen Lyons. The authors confirm that any data utilised in the submitted manuscript have been lawfully acquired in accordance with The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.