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Validation of the Work-Related Quality of Life Scale in Rehabilitation Health Workers: A Cross-Sectional Study

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Abstract

Background: *Work-related quality of life (WRQoL) is a multidimensional concept related to life satisfaction. Evaluating WRQoL is essential in healthcare settings since employee satisfaction affects patient service quality. Only a few studies have focused on the quality of life of rehabilitation health workers. We aimed to validate the Italian version of the WRQoL scale on a population of rehabilitation health professionals; the secondary objective was to investigate the work-related quality of life of professionals concerning the work settings in which they operate.* **Methods:** *Participants were recruited from January 2022 to December 2023 according to specific inclusion criteria. Questionnaires were administered through an online survey requiring also personal employment data, and together with the SF-12 questionnaire, a test-retest was performed on 30 therapists. Reliability was assessed with Cronbach's alpha, test-retest stability through intraclass correlation coefficient (ICC), and concurrent validity was calculated using Pearson's correlation.* **Results:** *We enrolled 284 individuals. Internal consistency analysis showed statistically significant results: Cronbach's alpha was > 0.70; construct validity analyses revealed statistically significant data for total scores and subscales, compared to SF-12 scores.* **Conclusion:** *The WRQoL scale is a valid and reliable tool to assess the quality of working life of rehabilitation professionals.*

1. Introduction

Work-related quality of life (WRQoL) is a multidimensional concept related to life satisfaction. Many people consider working a form of social identity, not just a means of survival. Work-related quality of life also includes other essential elements of the personal sphere, such as family, leisure, and social activities. A high quality of working life has been shown to play a key role in reducing strain inside and outside the workplace [1, 2].

Healthcare professionals who interact with patients, relatives, and caregivers often experience emotionally charged situations and high levels of stress. Stress at work can lead to reduced professional performance, wellbeing, and quality of life and high levels of anxiety, depression, or physical exhaustion. A consequence of chronic stress can be

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burnout syndrome, characterised by emotional exhaustion, depersonalisation, and poor personal fulfillment [4].

Evaluating work-related quality of life is particularly important in healthcare settings since employee satisfaction directly affects the quality of performance and patient services [5]. According to current literature, factors associated with a better work-related quality of life are the physical and emotional wellbeing of the individual, organizational and work-related measures (such as turnover and quality of work), an adequate salary, fair pay, a safe and healthy work environment, opportunities for capacity development and career growth, social integration, and shared values and discussions with the work team [6].

The relationship between job satisfaction and work-related quality of life has been studied in different professions [7–9]. Many studies have been conducted on the quality of life of nurses, especially during the COVID-19 pandemic, as well as that of surgeons and emergency room doctors [10–15]. Only a few studies have focused on the quality of life of rehabilitation health workers. For example, the survey conducted by Rostami et al. specifies that studies on this issue are essential since work-related quality of life and job satisfaction affect therapists' health quality and the quality of services they provide [16]. Bowens et al. assessed the quality of life of physiotherapists in Alabama in 2021. They concluded that doctors and employers should evaluate the personal, occupational, and systemic factors contributing to reduced quality of professional life to implement preventive strategies to mitigate burnout [17].

An instrument that aims to evaluate general QoL in healthy subjects was developed in the USA and called SF-12 Health Survey version 2 (SF-12v2); it is a generic short-form health survey created from the original SF-36. It produces two summary measures evaluating physical and mental self-perceived health; for this reason, it represents a suitable and complete tool to assess self-perceived quality of life. SF-12v2 has been successfully tested in several Western European countries on large samples of the general population, proving its brevity, comprehensiveness, reliability, validity, and cross-cultural applicability. Gandek et al., in a cross-validation study, tested the SF-12v2 suggested in the original United States study for nine European countries (Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, and the United Kingdom) [18]. The SF-12v2, since then, has been extensively used in studies involving the general population and disease-specific groups [19].

As regards WRQoL, in 2021, a scoping review by Silarova et al. described seven tools that can be used to measure the work-related quality of life of health professionals, considering aspects such as psychophysical wellbeing, quality of working life, job satisfaction, burnout, and professional identity [20]. The assessment tools that evaluate the most aspects of the quality of working life are the Quality of Work Life and the Work-Related Quality of Life (WRQoL) scales developed by Van Laar et al. in 2007 [21, 22]. The latter consists of a questionnaire first tested in the health sector, applied to different work environments, and translated into nine languages [23–25]. It is composed of 26 items and includes six dimensions in its original form: control at work (CaW), general wellbeing (GWB), home-work interface (HWI), job and career satisfaction (JCS), stress at work (SaW), and working conditions (WC). In 2011, a revised scale was developed, including a seventh dimension, employee engagement (EEn), which evaluates how employees are engaged in the organization and its values. The WRQoL scale provides a multidimensional tool for measuring work-related quality of life thanks to tested and validated psychometric properties. Garzaro et al. translated and validated this scale on an Italian population of nurses and doctors [2].

We aimed to validate the Italian version of the WRQoL scale on a population of rehabilitation health professionals (physiotherapists, speech therapists, orthoptists, psychiatric rehabilitation technicians, occupational therapists, neuropsychomotricity therapists, podiatrists, professional educators) and investigate its psychometric properties. The secondary objective was to investigate the work-related quality of life of professionals concerning the work settings in which they operate and the characteristics of the sample.

2. Methods

2.1 Participants

Participants were recruited from January 2022 to December 2023, and each gave informed consent for participation. The procedures followed were following the Helsinki Declaration as revised in 2008.

The inclusion criteria were as follows: i) employment as a healthcare worker in the field of rehabilitation, ii) possession of a Bachelor's degree or equivalent, iii) registration in the relevant professional register, iv) regular employment, and v) employment in an Italian region. Operators with the following characteristics were excluded from the study: operators not included in the professional register, graduates or holders of the qualification who did not work in the rehabilitation field, or retired professionals: 284 individuals were recruited for the study. Their characteristics are shown in Table 1.

2.2 Procedures

Questionnaires containing the Italian version of the WRQoL scale were administered through an online survey sent by email to professionals working in various Italian regions (Basilicata, Campania, Emilia-Romagna, Lazio, Lombardy, Piedmont, Apulia, Sardinia, Veneto); the link containing the questionnaire was sent to 300 health professionals. The WRQoL scale was administered together with a section requiring personal employment data (date of birth, sex, profession, years of work, type of work structure, Italian region, type of patients mainly treated, type of employment contract) and the 12-Item Short-Form Survey (SF-12) [26]. A test-retest was performed on 30 therapists who gave their consent, i.e., they were given the WRQoL a second time after 24-48 hours.

2.3 Data Analysis

A descriptive analysis was performed to analyze the characteristics of the sample. Percentage, mean, and standard deviation (SD) of variables were calculated. The scale's internal consistency

Table 1. The mean age of study subjects was 35; 75.7% were female; the largest group was represented by physiotherapists (42.6%) with a permanent contract (46.5%). The mean working duration was 9.27 years, mainly in rehabilitating neurological diseases in Central Italy (82.4%).

	average±SD	N°(%)
Age	35.0±10.3	284
Age range		
≤ 30		134 (47.2)
31-49		118 (41.5)
≥ 50		32 (11.3)
Gender		
Male		69 (24.3)
Profession		
Physiotherapist		121 (42.6)
Occupational therapist		54 (19.0)
Speech therapist		47 (16.5)
Neuro and psychomotricity therapist		22 (7.7)
Orthoptist		6 (2.1)
Professional educator		18 (6.3)
Podiatrist		10 (3.5)
Psychiatric rehabilitation technician		6 (2.1)
Working years	9.27±9	
Type of structure		
Outpatient clinic		44 (15.5)
Nursing home		16 (5.6)
Private studio		50 (17.6)
Home service (cooperative/ASL)		33 (11.6)
Daycare center		13 (4.6)
Rehabilitation center		72 (25.4)
Hospital		56 (19.7)
Type of patients		
Pediatric		80 (28.2)
Geriatric		43 (15.1)
Neurological		88 (31.0)
Orthopedic		61 (21.5)
Cardio-respiratory		10 (3.5)
Pelvic floor rehabilitation		2 (0.7)
Type of contract		
Full-time/part-time permanent contract		132 (46.5)
Full-time/part-time fixed-term contract		44 (15.5)
Freelance		102 (35.9)
Occasional performance contract		6 (2.1)
Area		
North		28 (9.9)
Center		234 (82.4)
South		22 (7.7)

Table 2. Reliability analysis. The table shows the ICC value for each scale domain, calculated based on test and re-test results, both for the total scale and each domain.

	Test	Re-test	ICC	95% CI
Tot	81.22±16.939	78.67±20.742	0.940	0.735-0.986
CaW	12.56±3.358	10.56±3.609	0.872	0.434-0.971
GWB	17.22±3.993	17.44±3.575	0.946	0.760-0.988
HWI	9.56±3.432	10.33±3.041	0.811	0.161-0.957
SaW	5.22±1.922	5.00±1.500	0.888	0.505-0.975
JCS	11.00±4.301	10.33±4.528	0.932	0.696-0.985
WC	13.33±2.739	12.67±4.243	0.649	-0.556-0.921
EEn	9.00±3.708	8.89±3.257	0.943	0.749-0.987

was examined by Cronbach's alpha, which should have a value greater than 0.7 to be statistically significant. The intraclass correlation coefficient (ICC) was calculated to measure reliability, which must be at least 0.70 to be statistically significant. Construct validity was evaluated using Pearson's correlation to determine the association between the WRQoL scale and the Italian version of the SF-12. Differences between groups in scores were calculated using independent samples t-tests and ANOVA (the significance level was set as a p-value less than or equal to 0.05).

Regarding scoring, the WRQoL scale is divided into seven subscales to be rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). Consequently, the maximum score corresponds to 130, obtained through the sum of scores in each domain; the items included in each domain are shown below.

CaW: items 1, 9, 19, 24; GWB: items 2, 7, 11, 13, 17; HWI: items 3, 4, 20; SaW: items 5, 15; JCS: items 6, 8, 14, 16; WCs: items 10, 12, 18, 25; EEn: items 21, 22, 23.

3. Results

3.1 Reliability

Internal consistency analysis showed statistically significant results for the entire scale and all subscales. The scale showed a Cronbach's alpha value equal to 0.95, with the following subdomain scores: EEn: 0.858, WCs: 0.854, JCS: 0.810, SaW: 0.843, HWI: 0.819, GWB: 0.897, and CaW: 0.797 (Table 2).

All alpha-deleted analyses showed that all items contributed to the internal consistency of the entire scale and different domains.

3.2 Construct Validity

Test re-test reliability was assessed, requiring the questionnaire to be completed 24-48 hours after the first administration. It was measured through ICC (Table 3).

Construct validity was calculated through correlation with the SF-12 domains, considering its construct (PCS12=Physical Composite Site; MCS12=Mental Composite Site). The analysis showed a statistically significant correlation between the mental health domain of SF-12 and the WRQoL scale total score and subscales. Specifically, all the correlations were positive, except for the one between Stress at Work (SaW) and MCS12, which was negative (Table 3).

3.3 Cross-Cultural Analysis

Cross-cultural analysis was performed through independent samples t-tests and ANOVA to determine whether the scores on the subscales differed according to the sample's demographic characteristics (Supplementary Table 1 shows t or F values).

There were no statistically significant differences in age and gender. As for professions, differences were found in CaW, WCs, and total scores

Table 3. Construct validity. The total score and all the subscales of the WRQoL scale showed a statistically significant correlation with SF-12 domains (Physical Composite Site and Mental Composite Site); in particular, the correlation between WRQoL scale domains and total and MCS12 was statistically significant (p<0.01).

	PCS12	MCS12
Tot	0.181**	0.489**
CaW	0.116	0.342**
GWB	0.147*	0.567**
HWI	0.166**	0.410**
SaW	-0.078	-0.250**
JCS	0.157**	0.355**
WCs	0.166**	0.295**
EEn	0.157**	0.361**

*JCS=Job and Career Satisfaction; SaW=Stress at Work; WCs=Working Conditions; EEn=Employee Engagement *p<0.05 **p<0.01.*

(p <0.01). Differences were found between people working in different types of structures regarding scores in CaW, JCS, WcS, Een domains and total score of WRQoL (p<0.01). Other statistically significant values were found between the type of patients with whom rehabilitation professionals deal most in the domains CaW and WcS (p<0.05) and between professionals who work in different areas of Italy in the domains WcS, Een, and total score (p<0,05) (Supplementary Figures 1-12).

4. Discussion

The primary objective of this study was to evaluate the psychometric properties of the WRQoL scale in a cohort of rehabilitation professionals, while the secondary objective was to identify associations between data collected from the sample and WRQoL scale scores.

The WRQoL scale obtained statistically significant results for construct validity due to its correlation with SF-12. This means the WRQoL construct is comparable to the SF-12 construct, a gold standard for measuring general QoL. Thus, it is possible to suppose that the WRQoL scale reflects the general health conditions of the considered population; moreover, it was found to be a reliable tool with an ICC value > 0.7.

Construct validity analyses showed that WRQoL scale scores correlated with the mental health domain of the SF-12 scale, which aligns with the current literature. General mental health is associated with Quality of Working Life [27–29].

The descriptive analysis showed that most participants were under 30, primarily females. The most recurrent profession was physiotherapist, while podiatrist was the least represented profession. This result is consistent with the fact that physiotherapists are generally the most represented professionals in the various rehabilitation structures in Italy.

Most operators worked in a rehabilitation center, while only 4.57% worked in daycare centers. Most therapists rehabilitated neurological and pediatric patients (30.98% and 28.16% respectively). The prevalent type of contract was a full-time/part-time permanent contract; almost all professionals worked in central Italy. Mean scores were similar to those obtained in the study of Garzaro et al., which was the first Italian validation of this version in a sample of health workers represented by nurses and physicians [2]. Regarding scores, there are no available cut-offs for the WRQoL Scale, but on this type of worker, the scale shows neither ceiling effect nor floor effect.

Through cross-cultural analyses, it was noted that different professions obtained different scores in the control domains at work, working conditions, and total scores. This difference indicates that neuropsychomotricity therapists feel less ability to have control at work and consequently don't feel involved enough in their organization or are less able to express their opinion. In contrast, speech and neuropsychomotricity therapists are less satisfied with their work conditions. On the other side, physiotherapists seem to report the best working conditions, according to the total score. A large part of the questionnaires were administered just two years after the start of the COVID-19 pandemic, so the results may be since many rehabilitation professionals were on the front line in terms of physical and psychological contact with patients and were thus unable to maintain adequate physical distancing and

COVID-19 mitigation measures [30]. Therefore, speech and neuropsychomotricity therapists primarily work with children and are more involved. In addition, children with neurodevelopmental disorders may have difficulty adapting to abrupt changes, and this can often lead to irritability in patients and provocative or aggressive behaviors toward the therapist [31, 32]. Indeed, it is known that the quality of life of healthcare workers could be correlated to their work and, therefore, to patient response [33]. This result suggests better investigating working situations regarding rehabilitation professionals who deal with children in the various structures in Italy, giving them more support and benefits in proportion to the stress experienced.

Cross-cultural analysis also showed a statistically significant difference between people who work in different types of structures in the following domains: control at work, job and career satisfaction, working conditions, employee engagement domains, and total score of WRQoL. It emerged that professionals who provide home services are less satisfied with their jobs and have fewer opportunities to have control at work, which indicates they don't feel fully involved in decision-making processes or cannot express their opinions in the workplace.

Compared to other groups, people employed in nursing homes feel less engaged in the organization and its values, while therapists working in a private studio seem to live in the best conditions, especially as regards their job and career satisfaction and the sphere of control at work.

Home services professionals often work alone and without adequate confrontation with colleagues and their employers; moreover, their worst quality of working life could be due to the many trips to the territory to provide therapies. Finally, another aspect to consider in the assessment of WRQoL could be the compensation and its relationship with the time needed to move from one patient's house to another.

Regarding the type of patients in charge, professionals involved in pelvic floor rehabilitation have a better situation in their workplaces regarding control at work and working conditions compared with the other groups. However, therapists who declared to deal with pelvic floor dysfunctions are only two of the whole sample.

Finally, the different area analyses showed that the North of Italy offers better workplace conditions and how employees are engaged in their organization and its values compared to the Center and South of Italy.

This result suggests a better investigation of working conditions and general quality of life of rehabilitation therapists in the center and south of Italy and why this investigated aspect result is inadequate; to date, there are not many rehabilitation professionals in different Italian regions. This would be useful for employers and health directors in providing solutions and consequently improving their performance at work and the quality of rehabilitation services.

Some studies have also reported how work-related stress evolves into a greater perception of poor physical and mental health. These two dimensions represent the two domains of the SF-12 scale, which evaluates the quality of life related to health.

The SF-12 was found to have a statistically significant association with the WRQoL scale. In particular, the mental health domain (MCS) included in the SF-12 scale showed a significant association with all WRQoL scores, meaning that mental health correlated with WRQoL scale scores. Current literature from even before the pandemic has shown that, like all healthcare professionals, rehabilitation professionals are at high risk of burnout. There are common mechanisms of burnout in the different professional groups considered, and therefore, further research on occupational health in rehabilitation settings is needed to prevent burnout [34]. As regards the physical health domain of SF-12 (PCS), it showed a correlation with all the subscales of WRQoL, except for "Control at Work" and "Stress at Work"; however, these two domains investigate aspects that are not related to physical health, while the other ones have an impact on it.

4.1 Limitations of the Study

Most questionnaires were completed by professionals operating in the center of Italy, with limited participation from professionals working in other Italian regions. Therefore, future multicenter studies should investigate the WRQoL scale through

a more homogeneous distribution of professionals from different regions. Finally, it would be interesting to study the responsiveness of the WRQoL scale to changes over time, for example, after a specific measure is adopted in the organization.

5. Conclusions

The WRQoL scale is a valid and reliable tool to assess the quality of working life of rehabilitation professionals. The WRQoL scale is a useful tool for coordinators and employers in different work settings to periodically evaluate employee work satisfaction and possibly guide them in business and management decisions.

Supplementary Material: Table S1; Supplementary Figure 1. Difference in CaW between professionals; Supplementary Figure 2. Difference in WcS between professionals; Supplementary Figure 3. Difference in Total score between professionals; Supplementary Figure 4. Difference in CaW between professionals who work in different types of structure; Supplementary Figure 5. Difference in CaW between professionals who work in different types of structure; Supplementary Figure 6. Difference in WcS between professionals who work in different types of structure. Supplementary Figure 7. Difference in Een between professionals who work in different types of structure; Supplementary Figure 8. Difference in Total score between professionals who work in different types of structure; Supplementary Figure 9. Difference in CaW between professionals who deal with different types of patients; Supplementary Figure 10. Difference in WcS between professionals who deal with different types of patients; Supplementary Figure 11. Difference in WcS between professionals who work in different areas of Italy; Supplementary Figure 12. Difference in Een between professionals who work in different areas of Italy.

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Declaration of Interest: The authors declare no conflict of interest.

Declaration on Ethics: All participants gave informed consent to participate in this study. The procedures followed the Helsinki Declaration as revised in 2008.

Author Contribution: I.R., F.D.A. and G.G. contributed to the design and implementation of the research, G.G., A.B., and F.P. contributed to the analysis of the results, and I.R., RS and G.S. contributed to the writing of the manuscript.

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