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Research article

Validation of Wound-QoL Questionnaire among Patients with Acute Wounds in Enugu, South-east Nigeria

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ABSTRACT

Globally, health related quality of life (HRQoL) has become an essential wound outcome measure in evaluating holistic care, clinical practice and research. In Nigeria, there is a dearth of validated studies on standardised instruments to assess quality-of-life in patients with acute wounds. This study validated the Wound-QoL questionnaire in Nigeria. It was a single-blinded randomized controlled study, carried out amongst 42 participants using simple blocked randomization to assign patients to different groups (Biodress, honey and povidone-iodine). Wound-QoL was used for data collection with due ethical consideration and data analysis. The median age of the participants was 32.5 years, with a slight male preponderance (52.4%). The global score was above 0.7 at both times tested with the subscale scores ranging from 0.420 to 0.754. The mean values for both Wound-QoL global scores (T0: 0.83, T1: 0.79) and two subscale scores (body: T0: 1.28, T1: 1.17, everyday life: T0: 0.61, T1: 0.58) decreased over time while the psyche subscale remained unchanged (T0: 0.53, T1: 0.53). On item selectivity, the global score was significantly correlated to each of the items and the subscales. This result showed that acute wounds affect patients' quality of life. It also indicates that the Wound-QoL questionnaire has positive psychometric properties. The Wound-QoL is a valid and reliable tool in assessing quality of life of people with acute wounds in Nigeria. A large-scale study in different regions of the country is recommended bearing in mind the cultural differences.

Keywords: *Acute wounds, biodress, health-related quality of life, validation, wound-QoL*

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INTRODUCTION

Clinicians often see wound healing as a medical phenomenon. There is growing evidence that it goes beyond this. This evidence shows that chronic wounds impact on the physical as well as psychosocial aspects of a patient which includes disturbed sleep pattern, social isolation, stress and disturbed mood often as a result of wound pain, increased exudate and malodour (Upton and Upton, 2015; Upton and South, 2011). These consequently affect the individual's dignity, comfort and quality of life (QoL).

QoL is defined as the general perception of well-being by an individual in the context of the cultural and value system in which they live and in relation to their expectations, concerns, goals and standards (Price, 2001). This definition is multidimensional, dynamic and subjective reflecting the health, emotions, social and economic aspects of an individual

accounting for its variability. These multiple interrelated dimensions are ascribed to the underlying structure of health-related quality of life (HRQoL) (Augustin *et al*, 2012). Assessment of the HRQoL has become a key component of patient management since it reflects patient perspective of disease and treatment (Augustin *et al*, 2012; Conde Montero *et al*, 2021; Prinsen *et al*, 2013). Thus, quality of life (QoL) instruments has been introduced in clinical care, quality management and clinical trials (Conde Montero *et al*, 2021; Amesz *et al*, 2020; Augustin *et al*, 2017; Vogt *et al*, 2020). An exclusive, available and easy to use tool is therefore necessary to meet the real needs of people with wounds. To meet this, Wound-QoL questionnaire was developed from three wound-specific HRQoL questionnaires: the Freiburg Life Quality Assessment for wounds (FLQA-w), the Cardiff Wound Impact Schedule (CWIS), and the Würzburg Wound Score

(WWS); aimed to be a brief and easier tool was developed (Blome *et al*, 2014; Blome *et al*, 2016).

The final psychometrically validated version of the Wound-QoL questionnaire contains 17 items and allows for conclusions to be made regarding the overall wound-specific HRQoL as well as its individual domains. It has been proven to be a well understandable, valid and a highly reliable questionnaire that is suitable for use in clinical trials as well as in clinical practice (Augustin *et al*, 2017; Sommer *et al*, 2017). The Wound-QoL has shown a good internal consistency, with high Cronbach's alpha for all the subscales and in the global scale (> 0.8) (Sommer *et al*, 2017). It has been translated into many languages and is therefore used internationally to assess QoL in people with chronic wounds in different settings and cultures (available on the website: www.wound-qol.com) (Conde Montero *et al*, 2021; Vogt *et al*, 2020). Until now, little attention has been given to the quality of life of people with acute wounds. The emphasis has been on chronic wounds. This could be because it is presumed that traumatic wounds are expected to heal in a definite pattern and would minimally affect patients' quality of life (Price and Harding, 2000) when compared with patients with chronic wounds. However, Fagerdahl *et al*, reported a lower quality of life among patients with acute wounds compared to those with chronic wounds (2014). People with acute wounds experience an immediate change in their life regarding physical functioning and social life which can affect their quality of life (Fagerdahl *et al*, 2014).

There is no validated instrument to assess the HRQoL of people with acute wounds. Assessing the quality of life of people with traumatic wounds will give a better understanding of the experiences of people with acute wounds as well as help in making a comprehensive conclusion with regards to the journey of patients with wounds. The Wound-QoL questionnaire has not been validated in Nigeria at this time. Hence, the aim of this study was to validate the Wound-QoL questionnaire for people with acute wounds in Nigeria.

MATERIALS AND METHODS

Study setting and design: Enugu State University of Science and Technology Teaching Hospital and the National Orthopaedic Hospital Enugu (a regional Burns centre) were the setting for the study. These centres offer burns, plastic and reconstructive services with high volume of patients due to their location and the presence of experts skilled in wound management. They are also referral centres for all wounds within the geopolitical zone and beyond.

Data from a single-blind randomized controlled trial was used for the study (patients did not know the intervention group they were assigned to). Simple block randomization was used to avoid selection bias as well as reduce the differences in demographic and clinical variables between the groups that might affect outcome and thus mask or exaggerate the effect of the intervention on the quality of life (Woodbury *et al*, 2012). This was done by one of the investigators using computer-generated random numbers to randomly assign numbers to each group to enhance dynamic allocation.

Sampling: Male and female patients that presented to the study centres with acute wounds were the target population for the study. Patients were recruited if they presented within 48 hours of injury. On the other hand, patients with any known allergy or sensitivity to the study wound care materials, ill or had other underlying medical or surgical conditions that may interfere with wound healing (signs of infection, on steroids, history of drug and /or alcohol abuse, uncontrolled diabetes etc.) were excluded from the study.

Procedure for data collection: The study team recruited the patients from the accident and emergency (A &E) units of the hospitals. First the objective of the study and protocols were explained to the patients and their significant other, then an informed written consent (signed or thumb printed) was obtained. All study procedures were conducted under the guidelines of good clinical practice. Data was collected twice within 7 days (within days 7-13 post injury) as recommended by the authors (Bloome *et al*, 2014) and to ensure the patients were stable enough to answer the questions. Wound-QoL was used for data collection. It consists of 17-items which assesses the social life, overall well-being as well as the physical symptoms and daily living of people with wounds. Each item has a five-step intensity assessment: *not at all - 0, a little - 1, moderately - 2, quite a lot - 3 and very much - 4* for assessing the impact of the wound on the patient's quality of life. The mean rating of all questions results in the global score. The instrument was translated to Igbo using the forward and backward process in accordance with the international standards for cross-cultural adaptations of instruments (Epstein *et al*, 2015).

The questionnaire was not administered on the day the patients had a dressing change. This was to ensure the hurt assessed is not as a result of the change of dressing which could be managed with pain medications but by the wound itself. The instrument was interviewer-administered by two of the investigators who read out the questions. This approach was chosen to ensure uniformity in data collection, to make sure the real meaning of each item was understood and the study aim achieved. Other information obtained were socio-demographic data of the participants and clinical information. For children less than 15 years, the investigators collected the data with their consent and that of their mothers. Three children (less than 5 years), were asked the same questions while the investigators observed their responses as well as validated these with their mothers. Data collection lasted for Nine (9) months (July 1, 2020 to March 31, 2021).

Ethical Consideration: Ethical clearance was obtained from the research ethics committee of the two institutions: ESUTHP/C-MAC/RA/034/Vol.11/140 and NOHE/S.313/X/204. The study was also registered with the Pan African Clinical Trial Registry (www.pactr.org) database –PACTR202103707607761. Administrative permits were obtained from appropriate authorities. Confidentiality and anonymity were guaranteed.

Data Analysis: At the end of the study, data was analysed using Data was analysed using SPSS version 26. The data analysis was performed in two stages: descriptive and

inferential analyses. The Kolmogorov-Smirnov test was used to assess the normality of each variable to determine the befitting tests to use for the analysis. Variables with significant results were considered not to be normally distributed. Continuous variables that were normally distributed were described using means, standard deviations, and range, while those that were not normally distributed were described using medians and interquartile range. Categorical data were described as frequencies, and proportions. For inferential statistics, Kruskal-Wallis test and Mann-Whitney U test were used for comparison of medians (for non-normally distributed variables) and a mixed between-within-subjects ANOVA was used to test for differences in the study group and in the different subscales. Cronbach's alpha test was used for assessment of validity while Spearman rho's correlation test was used to test for item selectivity. Data analysis was conducted in both the total score and in each subgroup with the significance level set as a p-value less than 0.05.

RESULTS

A total of Forty-two (42) patients were included (fourteen in each group) in this study. The median age of the participants was 32.5 years, and the range was 2 to 68 years. Almost 70% of these patients were aged between 19-45 years and only one participant was above sixty years old. The gender distribution had a slight male preponderance (52%). The major causes of the wounds were road traffic accidents (40.5%), home accidents (19.0%), and gunshots (14.3%). Flame burns and work accidents accounted for the other 19.0% of the participants. The size of the wounds varied; the length ranged from 1cm to 36 cm and the width 2cm to 28 cm (Table 1). Most of the participants (61.9%) had at least a wound in one or both upper limbs and none had a wound on the perineum. Only one participant each had a wound on their abdomen or back.

Table 1:

Sociodemographic and wound specific descriptive statistics of the participants n=42

ITEM		GROUP N (column proportion)			TOTAL N = 42
		Biodress n = 14	Honey n = 14	Povidone iodine n = 14	
Age:	Median (IQR)	31.5 (36.0)	32.5 (12.0)	29.5 (32.0)	32.5 (16.0)
	Range	2 – 47	22 – 68	3 – 41	2 – 68
	2 – 5	4 (28.6)	0	4 (28.6)	8 (19.0)
	6 – 12	0	0	1 (7.1)	1 (2.4)
	13 – 18	1 (7.1)	0	0	1 (2.4)
	19 – 30	2 (14.3)	5 (35.7)	2 (14.3)	9 (21.4)
	31 – 45	6 (42.9)	7 (50.0)	7 (50.0)	20 (47.6)
	46- 60	1 (7.1)	1 (7.1)	0	2 (4.8)
	Above 60	0	1 (7.1)	0	1 (2.4)
Gender:	Male	6 (42.9)	9 (64.3)	7 (50.0)	22 (52.4)
	Female	8 (57.1)	5 (35.7)	7 (50.0)	20 (47.6)
Cause of injury:	RTA	4 (28.6)	6 (42.9)	7 (50.0)	17 (40.5)
	Assault	2 (14.3)	1 (7.1)	0	3 (7.1)
	Gunshot injury	2 (14.3)	3 (21.4)	1 (7.1)	6 (14.3)
	Home accident	6 (42.9)	0	2 (14.3)	8 (19.0)
	Others	0	4 (28.6)	4 (28.6)	8 (19.0)
#Injury size (Mean ± SD; Range):	Length (cm)	16.4 ± 7.9 (6-36)	13.6 ± 6.8 (1-26)	15.4 ± 7.9 (6-32)	15.1 ± 7.4 (1-36)
	Width (cm)	11.4 ± 6.3 (4-28)	11.2 ± 4.6 (4-19)	10.4 ± 6.6 (2-24)	11.0 ± 5.8 (2-28)
	Diameter (area) (cm ²)	228.6 ± 257.0 (24- 1008)	178.5 ± 143.7 (6 - 494)	204.5 ± 224.4 (24- 768)	203.9 ± 209.5 (6- 1008)

The result in Table 2 showed that the mean values for both Wound-QoL global scores (T0: 0.83, T1: 0.79) and two subscale scores (body: T0: 1.28, T1: 1.17, everyday life: T0: 0.61, T1: 0.58) decreased over time while the psyche subscale remained unchanged (T0: 0.53, T1: 0.53). Paired t-test was used to assess for significant differences in the answers of the participants at times 1 and 2 to the various items of the wound quality of life (QoL) assessment tool, and this showed no statistically significant difference for all the items; the subscales, and the global (Table 2). To further understand if there were differences contributed by the study groups (biodress/honey/povidone-iodine), different statistical tests were used. The Kruskal-Wallis test was used to compare the means of the groups at times 1 and 2 separately (Table 3).

At time 1, significant differences were noted in Q 2, 3, 5, and 9 and in subscales *body* and *psyche*, and in the *global score*. For Q 2 and 5; subscale *body*, the *global score* and the biodress group had significantly lower scores than the other groups (vs povidone-iodine = 0.018, 0.011, 0.036, and 0.019; vs honey = 0.000, 0.006, 0.003, and 0.002 respectively). For Q 3 and 9; honey was significantly higher than the other groups (vs biodress = 0.002 and 0.023; vs povidone-iodine = 0.038 and 0.001 respectively). For subscale *psyche*, only biodress was significantly less than honey (p = 0.005). At time 2, a significant difference was noted only in Q 2. This was contributed by povidone-iodine which was significantly less than others (vs honey = 0.030; vs biodress = 0.005).

A mixed between-within-subjects ANOVA was used to test for the differences contributed by the study groups (biodress/honey/povidone-iodine) at the different times (time 1 vs time 2) on each item on the scale. Significant differences were noted in Q 1, 2, 3, 5, 9 and 17, and in the subscale *body*, and the *global score* (Table 3). The sources of the interaction effects from the various study groups are presented in Table 4.

Table 2:
Quality of life of all participants and changes in mean scores

n= 42

Wound-QoL items and subscales		T1				T2				Mean diff. (T2-T1)	T-test (p-value)
		n	min	max	Mean±SD	N	min	max	Mean±SD		
Q1	my wound hurts	42	0.0	4.0	2.5 ± 0.9	42	0.0	4.0	2.2 ± 0.8	-0.262	1.379 (0.175)
Q2	my wound had a bad smell	42	0.0	3.0	0.8 ± 0.9	42	0.0	3.0	0.8 ± 0.9	0.000	0.000 (1.00)
Q3	the discharge from the wound has upset me	42	0.0	3.0	0.6 ± 0.9	42	0.0	2.0	0.5 ± 0.7	-0.071	0.476 (0.637)
Q4	the wound has affected my sleep	42	0.0	3.0	1.2 ± 0.9	42	0.0	3.0	0.6 ± 0.8	-0.143	0.771 (0.445)
Q5	the treatment of the wound has been a burden to me	42	0.0	3.0	1.2 ± 1.0	42	0.0	3.0	0.7 ± 0.8	-0.048	0.255 (0.800)
Q6	the wound has made me unhappy	42	0.0	2.0	0.7 ± 0.7	42	0.0	2.0	0.7 ± 0.7	0.024	-0.178 (0.860)
Q7	I have felt frustrated because the wound is taking so long to heal	42	0.0	3.0	0.6 ± 0.9	42	0.0	3.0	0.6 ± 0.8	-0.024	0.136 (0.893)
Q8	I have worried about my wound	42	0.0	3.0	0.7 ± 0.8	42	0.0	3.0	0.7 ± 0.8	0.000	0.000 (1.000)
Q9	I have been afraid of the wound getting worse or of getting new wounds	42	0.0	1.0	0.2 ± 0.4	42	0.0	1.0	0.2 ± 0.4	0.000	0.000 (1.000)
Q10	I have been afraid of hitting the wound against something	42	0.0	2.0	0.4 ± 0.7	42	0.0	2.0	0.4 ± 0.7	0.000	0.000 (1.000)
Q11	I have had trouble moving around because of the wound	42	0.0	2.0	0.6 ± 0.7	42	0.0	2.0	0.6 ± 0.6	-0.024	0.216 (0.830)
Q12	climbing stairs has been difficult because of the wound	42	0.0	3.0	0.4 ± 0.7	42	0.0	2.0	0.3 ± 0.5	-0.048	0.573 (0.570)
Q13	I have had trouble with everyday activities because of the wound	42	0.0	3.0	0.6 ± 0.7	42	0.0	3.0	0.6 ± 0.7	-0.024	0.227 (0.822)
Q14	the wound has limited my recreational activities	42	0.0	2.0	0.5 ± 0.6	42	0.0	2.0	0.5 ± 0.6	0.000	0.000 (1.000)
Q15	the wound has forced me to limit my contact with other people	42	0.0	1.0	0.5 ± 0.5	42	0.0	1.0	0.5 ± 0.5	0.000	0.000 (1.000)
Q16	I have felt dependent on help from others because of the wound	42	0.0	3.0	1.1 ± 0.7	42	0.0	3.0	1.0 ± 0.7	-0.048	0.269 (0.789)
Q17	the wound has been a financial burden to me	42	0.0	3.0	1.5 ± 0.8	42	0.0	3.0	1.4 ± 0.7	-0.143	1.030 (0.309)
Subscale "body"		42	0.20	2.80	1.28 ± 0.64	42	0.20	2.20	1.17 ± 0.57	-0.105	0.783 (0.438)
Subscale "psyche"		42	0.00	2.00	0.53 ± 0.46	42	0.00	2.00	0.53 ± 0.43	0.000	0.000 (1.000)
Subscale "everyday life"		42	0.00	1.67	0.61 ± 0.34	42	0.00	1.33	0.58 ± 0.31	-0.024	0.363 (0.719)
Global score		42	0.06	1.53	0.83 ± 0.38	42	0.06	1.41	0.79 ± 0.33	-0.048	0.608 (0.547)

Table 3:
Quality of life according to the wound dressing type

n= 42

Wound-QoL items and subscales	T1				T2				p-value (T1 vs T2 vs Study group)
	Mean ± SD			p-value	Mean ±SD			p-value	
	Biodress	Honey	P. iodine		Biodress	Honey	P. iodine		
Q1	2.2 ± 0.7	2.5 ± 1.1	2.8 ± 0.9	0.153	2.4 ± 0.9	2.4 ± 0.8	1.9 ± 0.9	0.149	0.034*
Q2	0.2 ± 0.4	1.4 ± 1.1	0.9 ± 0.5	0.002*	1.2 ± 1.0	1.0 ± 1.0	0.3 ± 0.5	0.013*	0.03*
Q3	0.1 ± 0.4	1.2 ± 1.1	0.4 ± 0.6	0.006*	0.6 ± 0.6	0.6 ± 0.8	0.3 ± 0.5	0.299	0.010*
Q4	1.2 ± 0.9	1.3 ± 1.1	1.2 ± 0.8	0.992	1.3 ± 0.8	0.9 ± 0.8	1.1 ± 0.8	0.382	0.537
Q5	0.6 ± 1.0	1.6 ± 0.8	1.5 ± 0.9	0.009*	1.4 ± 0.9	1.2 ± 0.8	0.9 ± 1.0	0.243	0.001*
Q6	0.6 ± 0.8	1.1 ± 0.8	0.5 ± 0.5	0.116	0.6 ± 0.7	0.9 ± 0.7	0.7 ± 0.8	0.656	0.424
Q7	0.4 ± 0.8	0.9 ± 0.9	0.6 ± 0.8	0.112	0.9 ± 1.1	0.7 ± 0.6	0.3 ± 0.6	0.145	0.100
Q8	0.5 ± 0.9	0.9 ± 0.9	0.6 ± 0.6	0.279	1.0 ± 0.9	0.5 ± 0.7	0.6 ± 0.9	0.176	0.086
Q9	0.1 ± 0.4	0.5 ± 0.5	0.0 ± 0.0	0.005*	0.3 ± 0.5	0.2 ± 0.4	0.1 ± 0.4	0.661	0.026*
Q10	0.3 ± 0.5	0.3 ± 0.6	0.6 ± 0.9	0.601	0.3 ± 0.5	0.4 ± 0.8	0.4 ± 0.8	0.964	0.492
Q11	0.9 ± 0.8	0.3 ± 0.5	0.6 ± 0.6	0.086	0.6 ± 0.7	0.4 ± 0.5	0.7 ± 0.6	0.296	0.486
Q12	0.2 ± 0.4	0.2 ± 0.4	0.6 ± 0.9	0.268	0.2 ± 0.4	0.4 ± 0.5	0.4 ± 0.6	0.717	0.099
Q13	0.4 ± 0.5	0.9 ± 0.8	0.6 ± 0.6	0.265	0.6 ± 0.5	0.6 ± 0.8	0.6 ± 0.6	0.984	0.386
Q14	0.3 ± 0.5	0.7 ± 0.6	0.5 ± 0.5	0.139	0.6 ± 0.6	0.6 ± 0.5	0.3 ± 0.5	0.205	0.058
Q15	0.4 ± 0.5	0.6 ± 0.5	0.6 ± 0.5	0.433	0.5 ± 0.5	0.6 ± 0.5	0.4 ± 0.5	0.757	0.444
Q16	0.8 ± 0.4	1.2 ± 0.9	1.2 ± 0.8	0.242	1.3 ± 1.1	0.9 ± 0.5	0.9 ± 0.4	0.634	0.087
Q17	1.1 ± 0.8	1.7 ± 0.9	1.7 ± 0.7	0.073	1.5 ± 0.8	1.4 ± 0.8	1.3 ± 0.6	0.742	0.034*
Subscale “body”	0.9 ± 0.4	1.6 ± 0.8	1.4 ± 0.5	0.010*	1.4 ± 0.6	1.2 ± 0.5	0.9 ± 0.5	0.056	0.002*
Subscale “psyche”	0.4 ± 0.5	0.7 ± 0.5	0.5 ± 0.3	0.021*	0.6 ± 0.5	0.5 ± 0.3	0.4 ± 0.5	0.302	0.134
Subscale “everyday life”	0.5 ± 0.3	0.6 ± 0.4	0.7 ± 0.4	0.373	0.6 ± 0.3	0.6 ± 0.3	0.5 ± 0.3	0.549	0.137
Global score	0.6 ± 0.3	1.0 ± 0.4	0.9 ± 0.3	0.006*	0.9 ± 0.4	0.8 ± 0.3	0.7 ± 0.3	0.140	0.004*

Table 4:

Sources of the difference in the different groups n = 42

	Q1	Q2	Q3	Q5	Q9	Q17	Subscale “body”	Global score
Biodress	0.533	0.007*	0.029*	0.017*	0.336	0.174	0.014*	0.023*
Honey	0.836	0.349	0.104	0.174	0.040*	0.136	0.187	0.147
Povidone-iodine	0.002*	0.006*	0.336	0.033*	0.165	0.054	0.003*	0.045*

Table 5:

Internal consistency of the wound QoL using Cronbach’s alpha test

Scale	Number of items	Cronbach’s alpha		Mean inter-item correlations	
		T1	T2	T1	T2
Global Wound-QoL scale	17	0.812	0.770	0.188	0.152
Subscale “body”	5	0.754	0.715	0.382	0.339
Subscale “psyche”	5	0.646	0.585	0.269	0.225
Subscale “everyday life”	6	0.488	0.420	0.125	0.099

To further examine the influence of age on the QoL items, Mann-Whitney U test was used to compare the means of each item, and significant differences were only noted at time 1 which was contributed by Q 13 and 17 where those less than eighteen years had lower scores compared to those above eighteen years.

Likewise, when the wound type was tested using the Kruskal-Wallis test, significant differences were noted at time 1 only and these were contributed by Q 11 and 12, and subscale *psyche*. Pairwise comparisons showed that the difference seen in the *psyche* subscale was contributed by those with burn injuries when compared to those with avulsions ($p = 0.018$) and lacerations (0.015). For item 11, those who had avulsions were significantly different from those with burns ($p = 0.044$) and lacerations ($p = 0.010$). Similarly, those with abrasions were significantly different from those with lacerations ($p = 0.032$). For item 12, those with lacerations were significantly different from those with avulsions ($p = 0.001$) and burns ($p = 0.001$).

Validation and consistency of the wound QoL tool: For internal consistency, at *global level*, the ratings were consistently above 0.7 at times 1 and 2. Subscale *body* also showed a good rating (above 0.7) while the findings of other subscales were less than 0.7; however, this can be explained by the few items in those subscales (items were less than 10).

Item selectivity: At time 1, the global score was significantly correlated to each of the items and the subscales, except for Q 10-12 which were insignificant. Subscale *body* was significantly correlated with all its items while subscale *psyche* was significantly correlated with 3 out of its 5 items; Q 8 and Q 10 were not well related. Subscale *everyday life* was significantly correlated with four out of six items; Q11 and 15 were not significant.

The pattern was also similar at time 2 except that subscale *psyche* was well correlated to four items as against the three times at time 1. Only Q 10 was not significantly correlated to the subscale (Table 2). This showed that overall, the wound QoL tool is a valid tool in assessing the QoL of people with acute wounds in Nigeria.

DISCUSSION

There were no missing data because the questionnaire was interviewer- administered. This study assessed the validity of the Wound QoL instrument among people with acute traumatic wounds in Nigeria. It could be seen that there was a slight male preponderance (52.3%). This corroborates other studies carried out in other parts of the world (Blome *et al*, 2014; Vogt *et al*, 2020). There was no flooring and ceiling effect in this study.

Overall, the results showed that the Wound-QoL is a valid instrument which can be used in assessing the quality of life of people with acute wounds in Nigeria with good internal consistency. The retest data yielded a good internal consistency and indicated stability to the Wound-QoL instrument in assessing QoL of people with acute wounds (Sommer *et al*, 2017). These results are similar to findings from other validation studies of the German, Swedish, and Portuguese-Brazilian versions of the Wound-QoL (Amesz *et al*, 2020; Augustin *et al*, 2017; Vogt *et al*, 2020; Fagerdahl and Bergström, 2018) and validation studies done elsewhere in both chronic and acute wounds (Sommer *et al*, 2017; Älgå *et al*, 2022).

The Wound-QoL questionnaire was assessed on a total and subscale basis and was shown to have validity. This reflects a clear picture of the patients’ experiences with wounds. On item selectivity, body symptoms were those that presented the worst average in the Wound-QoL. These were odour, secretion of the wound, in addition to wound affecting their sleep and the treatment is a burden. Similar data were reported in studies carried out in Brazil and Portugal (Amesz *et al*, 2020; Alves *et al*, 2016; Vogt *et al*, 2020). These findings demonstrate the importance of wound care providers working with patients to set goals of care and make decisions regarding their care to meet the individualised needs of these patients. Item 1 (my wound hurts/pain) had the highest mean score at both times tested in the study. This is higher than the reports from other authors (Amesz *et al*, 2020) and could be because the wounds in this study were acute which may have led to a sudden and temporary change to the patients’ homeostasis while patients with chronic wounds may have adapted to their

wounds. The questionnaire was not administered on the day the patients had a dressing change. This was to ensure that the pain assessment was a true reflection of the wound itself and not from extraneous factors such as dressing change or the type of dressing material used (Price *et al* 2008).

The item 12 on the questionnaire (climbing stairs has been difficult because of the wound) was a bit of a challenge for a few patients who did not regularly use stairs at home. However, they reported that they believed this was similar to the stress of taking a walk and getting in and out of bed. This item has been removed from the revised version of the questionnaire by the authors because it caused some difficulties in clinical practice where it may not be applicable (patients in a wheelchair or those without stairs at home) (von Stülpnagel *et al*, 2021). Additionally, item 11 (... I have had trouble moving around because of the wound) already covered the ability to move around as reported by patients in this study (von Stülpnagel *et al*, 2021). Similar findings were reported by previous authors in a Dutch and Swedish study (Amesz *et al*, 2020; Fagerdahl *et al*, 2014).

Item 15 (the wound has forced me to limit my contact with other people) was perceived as playmates, classmates by the children. Likewise, item 17 (the wound has been a financial burden to me) could not fully be ascertained in patients that were retired, on health insurance or not employed (including those less than 18 years old). This was because someone else bore the cost of their treatment either their parents/guardians/benefactors or health insurance as the case may be. . The response to this item was ascertained from the mothers in the case of children. This item has recently been removed in the revised Wound-QoL instrument, because similar to this study, it has been reported that country-specific health systems might influence a patients experience and attitude towards this item. It does not belong to any of the subscales (von Stülpnagel *et al*, 2021).

It has been established that wounds (acute and chronic) generally affect a patient's QoL. Assessment of HRQoL has been recommended by most wound care experts as a key principle in patient-reported outcome in people with wounds (Conde Montero *et al*, 2021). Assessing a patient's HRQoL and experiences is necessary to optimize and provide an individualized care (Gottrup *et al*, 2010). Currently, there are no validated instruments to assess the HRQoL in those with acute wounds. A validated instrument for assessing HRQoL in this group will help to increase the understanding of the experiences of this subset of patients as well as influence the choice and development of treatment strategies.

The Wound-QoL questionnaire has been shown in this study to be reliable and a valid tool for use in clinical practice and research for assessing HRQoL of patients with acute wounds in Nigeria. So far, to the best of my knowledge, only a study in Jordan and Iran has tested its use in HRQoL of people with acute wounds (Algå *et al*, 2022). This questionnaire can further be tested in different settings and different types of acute wounds for possible adaptation and use in the different parts of the world to assess and meet the needs of people with acute wounds.

The sample size was small compared to other studies in literature. This was occasioned by a number of factors, chief amongst which was getting patients who fulfilled the inclusion

criterion of acute wounds during the COVID-19 pandemic when this study took place. Given the challenges posed by the limited movement during lockdown and the lack of effective ambulance services in Nigeria, the absolute number of injuries was at a minimal level because people were largely restricted to their homes and immediate neighbourhood. This resulted in a drop in the number of patients that fulfilled the study criteria when compared to the forecast (pilot study from the hospital records). Furthermore, the practice of late presentation in Nigeria also contributed to some extent to the sample size. A study with a larger sample size and involving the other geopolitical regions of Nigeria will give a better picture of the Wound-QoL tool in Nigeria.

In conclusion, people with acute wounds may also have a reduced QoL as a result of the wound. Hence, an inclusive multidisciplinary wound care team is necessary in developing a comprehensive and individualised plan of care. This study has proven the Wound-QoL questionnaire to be sufficient in assessing QoL of patients with acute wounds in Eastern Nigeria and chronic wounds globally. This questionnaire was validated in the Eastern region of the country and studies to validate its use in other regions of the country is necessary to give a comprehensive tool for use in Nigeria.

Author contributions:

All the authors collaborated on the work. Authors ACJ, AAN, OII and AWI designed the study and managed the literature searches. Authors ACJ, OHC, AAN, MUC and OII performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors ACJ, OHC, OII, MUC, AAN and AWI reviewed the first draft critically. All authors read and approved the final manuscript.

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