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Knowledge, Attitudes, and Reported Practice Indicators for Neonatal Jaundice Management Among Nurses in Mogadishu, Somalia: A Cross-Sectional Study

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Research Article

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Abstract

Background

Neonatal jaundice is common in the first days of life, but severe hyperbilirubinemia can cause acute bilirubin encephalopathy, kernicterus, permanent neurological injury, and death. Nurses are central to early recognition, phototherapy care, monitoring, and referral, yet evidence on their preparedness in Somalia is scarce. We assessed nurses' knowledge, attitudes, and reported practice indicators regarding neonatal jaundice in Mogadishu and examined associated factors.

Methods

We conducted a hospital-based descriptive cross-sectional survey among 133 nurses recruited purposively from three hospitals in Mogadishu between November 2025 and July 2026. A structured questionnaire collected sociodemographic characteristics and knowledge (eight scored items), attitude (five scored items), and practice items. Knowledge and attitude scores were classified as good, moderate, or poor. Data were analyzed in IBM SPSS Statistics using frequencies, Pearson chi-square tests, Spearman correlation, and exploratory binary logistic regression. Practice items were analyzed individually.

Results

Seventy-five nurses (56.4%) had good knowledge, 25 (18.8%) moderate, and 33 (24.8%) poor knowledge; 99 (74.4%) met the study-defined favorable-attitude threshold, 23 (17.3%) were in the moderate category, and 11 (8.3%) in the poor category. Knowledge was associated with age group ($p = 0.040$), education, professional rank, and work unit (each $p < 0.001$). Attitude was associated with age, marital status, education, rank, work unit, and experience. Knowledge and attitude scores were positively correlated (Spearman rho = 0.643, $p < 0.001$). In exploratory adjusted models, degree-or-higher education (OR 10.84, 95% CI 1.11–105.69), staff/senior-staff rank (OR 4.02, 1.07–15.02), and NICU employment (OR 3.55, 1.34–9.44) were associated with good knowledge, while staff/senior-staff rank (OR 5.65, 1.50–21.23) and NICU employment (OR 17.11, 4.82–60.76) were associated with good attitude. Most nurses (89.5%) had cared for jaundiced neonates and 88.0% assessed jaundice by observing skin and sclera; 51.1% selected providing eye care during phototherapy and 70.7% identified overheating as a phototherapy complication.

Conclusions

Just over half of the nurses had good knowledge and about three-quarters met the study-defined favorable-attitude threshold, with important gaps in knowledge of causes and risk factors. Knowledge

and attitudes were higher among nurses with degree-level education, higher rank, and NICU experience. Competency-based training, protocol support, and clinical audit are needed, and future studies should use a validated practice instrument combined with direct observation.

Background

Neonatal jaundice is one of the most frequent clinical conditions of the neonatal period. Although most cases are physiological and self-limited, excessive unconjugated bilirubin can progress to acute bilirubin encephalopathy and kernicterus, with potentially permanent neurological sequelae [1]. The burden is greatest in low- and middle-income countries, where delays in recognition, referral, and treatment magnify preventable harm [1, 6]. A meta-analysis in sub-Saharan Africa estimated a pooled prevalence of neonatal hyperbilirubinemia of 28.1%, with glucose-6-phosphate dehydrogenase deficiency and mother–infant blood-group incompatibility both associated with increased risk [5].

Contemporary guidance emphasizes systematic assessment of risk factors, bilirubin measurement when indicated, timely phototherapy at age-specific thresholds, feeding support, monitoring during treatment, and escalation or exchange transfusion for severe disease. The 2022 American Academy of Pediatrics guideline stresses that treatment decisions should rest on age in hours, gestational age, bilirubin concentration, and neurotoxicity risk factors rather than on visual appearance alone [2, 3], and the World Health Organization places newborn assessment within routine postnatal care [4].

Somalia continues to face high newborn mortality, with a neonatal mortality rate of approximately 35 deaths per 1,000 live births in 2023 [7]. Nurses working in maternity, postnatal, and neonatal units are typically the first health professionals to observe jaundice and to initiate or support its management, so their knowledge and attitudes directly influence timely care.

Evidence from other African settings shows that health workers' preparedness varies. Among 202 nurses and midwives in northern Ghana, 69.3%, 64.9%, and 62.9% had good knowledge, attitudes, and practices, respectively [8]. In Ibadan, Nigeria, 80.2% of primary health workers had poor knowledge and many reported unsafe practices such as sunlight exposure and glucose water [9]. Studies of mothers in Ethiopia and Ghana also document important knowledge gaps [10, 11]. Comparable evidence on nurses in Somalia appears to be scarce.

This study therefore assessed nurses' knowledge, attitudes, and reported practice indicators regarding neonatal jaundice management in three hospitals in Mogadishu and examined the participant characteristics associated with knowledge and attitude levels.

Methods

Study design and setting

We conducted a hospital-based, descriptive cross-sectional quantitative study between November 2025 and July 2026 in three hospitals in Mogadishu, Somalia: Somali Sudanese Specialized Hospital, SOS Hospital, and Aden Adde Hospital. The study is reported in accordance with the STROBE statement for cross-sectional studies [17] (Additional file 2).

Participants and sampling

The target population was nurses involved in neonatal care and neonatal jaundice management. Nurses working in neonatal or maternity units with at least six months of experience were eligible; student nurses, interns, and nurses on leave were excluded. The required sample size was calculated using the single-population proportion formula, assuming a 95% confidence level (Z = 1.96), an expected proportion of 0.50 in the absence of comparable local evidence, and a 9% margin of error, yielding a final sample of 133 nurses; a wider margin than the conventional 5% was accepted because the eligible nursing workforce across the three participating units was limited during the study period, and a 5% margin would have required recruiting nearly all eligible staff, which was not operationally feasible without disrupting clinical coverage. Participants were selected using a combination of purposive and convenience elements: eligible nurses on duty in neonatal, maternity, and related units during data-collection visits were invited consecutively until each hospital's quota was reached, with 44, 45, and 44 nurses recruited from Somali Sudanese Specialized Hospital, SOS Hospital, and Aden Adde Hospital, respectively, an approach common in facility-based nursing surveys where complete sampling frames are not readily available [16]. Because this is a non-probability sample, findings describe the nurses who participated at these three hospitals and are not population estimates for all nurses in Somalia.

Data collection and questionnaire

Data were collected using a structured, self-administered questionnaire developed specifically for this study. The questionnaire comprised four sections: sociodemographic characteristics, knowledge, attitude, and practice related to neonatal jaundice management. The questionnaire was reviewed for relevance, clarity, and completeness by supervisors at SIMAD University before data collection. The English-language questionnaire is provided as Additional file 1. The knowledge section contained eight scored items (Questions 8–12 and 17–19), the attitude section contained five scored items (Questions 20–24), and the practice section contained reported practice indicators (Questions 25–29).

Scoring and outcome definitions

Scoring and outcome definitions

Knowledge comprised eight scored items (each correct response scored 1, otherwise 0; range 0–8) and attitude comprised five scored items (range 0–5). Scores were classified using modified Bloom’s cut-offs: good (≥ 80%), moderate (60–79%), and poor (< 60%), corresponding to knowledge scores of 7–8, 5–6, and 0–4, and attitude scores of 4–5, 3, and 0–2. For the multivariable analysis, good knowledge

and good attitude were treated as binary outcomes (good versus moderate/poor). For questions with several clinically acceptable options, only the single option designated correct in the questionnaire key was scored, which may underestimate knowledge (see Limitations).

Practice was assessed with items on involvement in caring for jaundiced neonates, the method of assessing jaundice, eye care during phototherapy, and the phototherapy complication respondents selected. Several of these items ask respondents to choose a single option for clinically non-exclusive actions or complications. A composite practice score was therefore not computed, and practice is reported as item-level indicators that should not be interpreted as a measure of overall competence.

Data analysis

Data were coded, cleaned, and analyzed using IBM SPSS Statistics version 26. Frequencies and percentages summarized categorical variables. Pearson chi-square tests examined associations between participant characteristics and knowledge or attitude category. Expected-count assumptions were examined for each cross-tabulation; across the 14 association tests, 35.4% of expected cells for knowledge tables and 37.5% for attitude tables were below 5, so the corresponding chi-square p-values were interpreted cautiously. Spearman's rank correlation assessed the relationship between knowledge and attitude scores. Exploratory multivariable binary logistic regression modeled good knowledge and good attitude using collapsed predictors: age ≥ 30 years, male sex, married status, degree-or-higher education, staff/senior-staff rank, NICU work, and > 5 years of experience. Odds ratios (ORs) with 95% confidence intervals (CIs) are reported. Statistical significance was set at $p < 0.05$ (two-sided); no adjustment for multiple comparisons was made. Language editing and formatting of the manuscript were assisted by AI language models (ChatGPT, OpenAI; Claude, Anthropic); the author reviewed and verified all content and takes full responsibility for it.

Ethics

Ethical clearance was obtained from the SIMAD University Research Ethics Committee. Permission was obtained from the participating hospitals, and participants gave written informed consent. Participation was voluntary, and responses were anonymous and confidential. The study was conducted in accordance with the Declaration of Helsinki.

Results

Participant characteristics

The sample was predominantly young, female, degree-educated, and early in professional experience, and most participants worked in the NICU (Table 1). Overall, 123 nurses (92.5%) reported previous training on neonatal jaundice.

Table 1
Sociodemographic characteristics of participants

Variable	Category	n	%
Age (years)	20–30	114	85.7
	30–40	17	12.8
	40–50	2	1.5
	Total	**133**	**100.0**
Gender	Female	96	72.2
	Male	37	27.8
	Total	**133**	**100.0**
Marital status	Single	101	75.9
	Married	30	22.6
	Divorced	2	1.5
	Total	**133**	**100.0**
Educational qualification	Degree	109	82.0
	Diploma	17	12.8
	Masters and above	7	5.3
	Total	**133**	**100.0**
Professional rank	Staff nurse	74	55.6
	Senior staff nurse	32	24.1
	Nurse	17	12.8
	Enrolled nurse	4	3.0
	Nursing officer	4	3.0
	Midwife	2	1.5
	Total	**133**	**100.0**
Current unit/department	Neonatal Intensive Care Unit (NICU)	89	66.9
	Labor ward	24	18.0
	Others	9	6.8
	Postnatal ward	7	5.3
	Child Welfare Clinic (CWC)	4	3.0

Variable	Category	n	%
	Total	**133**	**100.0**
Years of work experience	Less than 5 years	112	84.2
	More than 5 years	21	15.8
	Total	**133**	**100.0**

N = 133; no missing values.

Knowledge

Seventy-five participants (56.4%) had good knowledge, 25 (18.8%) moderate knowledge, and 33 (24.8%) poor knowledge. The strongest item-level performance was recognition that untreated jaundice can cause death (94.7%), followed by recognition of scleral/skin jaundice (88.0%), the kernicterus complication (78.9%), the 5–7 mg/dL-or-greater visual threshold (75.2%), and the specified blood-group combination (75.2%). Recognition of immature liver as a cause/risk factor was lowest (46.6%) (Table 2).

Table 2
Knowledge items and questionnaire-designated responses

Item	Questionnaire-designated response	n	%
Q8: Neonatal jaundice is defined as	Yellow discoloration of the sclera of the eyes	117	88.0
Q9: Causes/risk factors of neonatal jaundice	Immature liver	62	46.6
Q10: Normal neonate appears jaundiced when serum bilirubin reaches	5–7 mg/dl or greater	100	75.2
Q11: Blood group combinations that may increase risk (select all that apply)	Mother O Rh(+), father B Rh(+)	100	75.2
Q12: Signs and symptoms of neonatal jaundice (select all that apply)	Yellow discoloration of skin and eyes	97	72.9
Q17: Neonatal jaundice can be treated by	Phototherapy	91	68.4
Q18: Untreated neonatal jaundice can cause death	Yes	126	94.7
Q19: Complications of neonatal jaundice include	Kernicterus	105	78.9
Note: The questionnaire-designated responses reflect the scoring key used in this study and should not be interpreted as a substitute for current age-, gestational-age-, bilirubin-, and risk-factor-based clinical treatment thresholds.			

n = number of respondents selecting the questionnaire-designated response; % is based on N = 133.

Attitudes

Ninety-nine participants (74.4%) had good attitudes, 23 (17.3%) moderate, and 11 (8.3%) poor attitudes. Most respondents regarded nurses as responsible for caring for jaundiced neonates (94.7%) and believed neonatal jaundice can be prevented (94.0%). Most rejected oral sugar water as a treatment (87.2%) and early-morning sunlight as a home treatment for physiological jaundice (80.5%); however, 12.8% and 19.5%, respectively, did not (Table 3).

Table 3
Attitude items and questionnaire-designated responses

Item	Questionnaire-designated response	n	%
Q21: Nurses are responsible for the care of neonates with neonatal jaundice	Yes	126	94.7
Q22: Nurses' responsibilities in managing neonatal jaundice include	Early assessment of neonates	76	57.1
Q23: Neonatal jaundice can be prevented	Yes	125	94.0
Q24: Oral water mixed with sugar can treat neonatal jaundice	No	116	87.2
Q25: Physiological jaundice can be treated at home using early morning sunlight	No	107	80.5

n = number of respondents selecting the questionnaire-designated response; % is based on N = 133.

Practice indicators

A total of 119 participants (89.5%) reported involvement in caring for neonates with jaundice, and most (88.0%) assessed jaundice by observing the skin and sclera. During phototherapy, 51.1% selected providing eye care and 35.3% selected covering the neonate's eyes; because both are clinically relevant, these responses are not mutually exclusive indicators of correct versus incorrect practice. Overheating was the most frequently selected phototherapy complication (70.7%), followed by dehydration (15.0%) (Table 4).

Table 4
Reported practice indicators

Indicator	Response	n	%
Involved in jaundice care	Yes	119	89.5
	No	14	10.5
	Total	**133**	**100.0**
Assesses jaundice by	Observing skin and sclera	117	88.0
	Checking palms and soles	11	8.3
	Observing stool color	5	3.8
	Total	**133**	**100.0**
Phototherapy care (eye care item)	Providing eye care	68	51.1
	Covering the neonate's eyes	47	35.3
	Changing eye patches regularly	10	7.5
	Ensuring eye patches are not tight	8	6.0
	Total	**133**	**100.0**
Phototherapy complication (single-response item)	Overheating	94	70.7
	Dehydration	20	15.0
	Diarrhea	16	12.0
	Retinal damage	3	2.3
	Total	**133**	**100.0**

N = 133; no missing values. Several items represent clinically non-exclusive actions or complications and are therefore presented descriptively rather than as a composite practice score.

Associations with knowledge and attitude

Knowledge category showed evidence of association with age group, educational qualification, professional rank, and current work unit, whereas gender, marital status, and years of experience did not show evidence of association at the conventional 0.05 level (Table 5). Favorable-attitude category showed evidence of association with age group, marital status, educational qualification, professional rank, current work unit, and years of experience, whereas gender did not (Table 6). Because several contingency tables contained sparse expected counts, these unadjusted p-values should be regarded as exploratory and interpreted cautiously rather than as definitive evidence of association.

Table 5
Exploratory associations between participant characteristics and knowledge category

Variable	Pearson χ²	df	P value
Age	9.997	4	.040
Gender	4.932	2	.085
Marital status	3.678	4	.451
Educational qualification	43.773	4	< 0.001
Professional rank	59.621	10	< 0.001
Current unit/department	37.205	8	< 0.001
Years of work experience	3.587	2	.166

Pearson χ² tests; N = 133. Several tables contained sparse expected counts, so asymptotic p-values are exploratory and should be interpreted cautiously. P values are two-sided.

Table 6
Exploratory associations between participant characteristics and favorable-attitude category

Variable	Pearson χ²	df	P value
Age	14.789	4	.005
Gender	4.849	2	.089
Marital status	10.118	4	.038
Educational qualification	45.822	4	< 0.001
Professional rank	59.257	10	< 0.001
Current unit/department	57.850	8	< 0.001
Years of work experience	17.601	2	< 0.001

Pearson χ² tests; N = 133. Several tables contained sparse expected counts, so asymptotic p-values are exploratory and should be interpreted cautiously. P values are two-sided.

Relationship between knowledge and attitude

Knowledge and attitude scores showed a positive monotonic association (Spearman rho = 0.643, p < 0.001). Higher knowledge scores tended to occur alongside higher attitude scores, but the cross-sectional design does not establish directionality or causality, and the low internal consistency of the five-item attitude scale limits confidence in interpreting the magnitude of this relationship.

Exploratory multivariable analysis

In the exploratory adjusted models, degree-or-higher education (OR 10.84, 95% CI 1.11–105.69; p = 0.040), staff/senior-staff rank (OR 4.02, 95% CI 1.07–15.02; p = 0.039), and NICU employment (OR 3.55, 95% CI 1.34–9.44; p = 0.011) were associated with higher odds of meeting the study-defined good-knowledge threshold (Table 7). In the attitude model, staff/senior-staff rank (OR 5.65, 95% CI 1.50–21.23; p = 0.010) and NICU employment (OR 17.11, 95% CI 4.82–60.76; p < 0.001) were associated with higher odds of meeting the study-defined favorable-attitude threshold (Table 8). These estimates should be interpreted as exploratory rather than definitive independent associations because the sample was small, predictor categories were collapsed, and several cells were sparse, resulting in wide confidence intervals. Model-fit diagnostics indicated acceptable calibration in both models (Hosmer–Lemeshow p = 0.69; Nagelkerke R^2=0.40 for knowledge; Hosmer–Lemeshow p = 0.34; Nagelkerke R^2=0.65 for attitude), but these diagnostics do not remove concerns about estimate precision and model stability. In particular, the confidence interval for degree-or-higher education in the knowledge model (1.11–105.69) is too wide to interpret as a stable effect size, and this estimate should be treated as hypothesis-generating only.

Table 7
Exploratory multivariable logistic regression for the good-knowledge threshold

Predictor	OR	95% CI upper		P value
Age ≥ 30 years	.39	.08	1.80	.227
Male	.43	.16	1.15	.092
Married	.67	.22	2.01	.472
Degree or higher education	10.84	1.11	105.69	.040
Staff/senior-staff rank	4.02	1.07	15.02	.039
NICU	3.55	1.34	9.44	.011
Experience > 5 years	1.27	.29	5.50	.749
Constant	.03	.00	.29	.002

Predictors entered in the exploratory model: age ≥ 30 years, male, married, degree or higher education, staff/senior-staff rank, NICU, experience > 5 years. Dependent variable: good knowledge (1 = good). Binary logistic regression; N = 133. OR, odds ratio; CI, confidence interval.

Table 8
Exploratory multivariable logistic regression for the favorable-attitude threshold

Predictor	OR	95% CI upper		P value
Age ≥ 30 years	.12	.01	1.40	.092
Male	.82	.19	3.65	.799
Married	3.20	.43	24.07	.258
Degree or higher education	6.42	.97	42.52	.054
Staff/senior-staff rank	5.65	1.50	21.23	.010
NICU	17.11	4.82	60.76	< 0.001
Experience > 5 years	.44	.07	2.82	.387
Constant	.06	.01	.37	.002

Predictors entered in the exploratory model: age ≥ 30 years, male, married, degree or higher education, staff/senior-staff rank, NICU, experience > 5 years. Dependent variable: good attitude (1 = good). Binary logistic regression; N = 133. OR, odds ratio; CI, confidence interval.

Discussion

In this survey of 133 nurses in three Mogadishu hospitals, 56.4% had good knowledge and 74.4% had good attitudes toward neonatal jaundice management, and knowledge and attitude were strongly correlated. Nurses were most secure in recognizing visible jaundice and its potentially fatal consequences, but recognition of causes and risk factors was weaker, with only 46.6% identifying immature liver and 75.2% the specified blood-group combination.

The proportion with good knowledge was lower, and the proportion with good attitudes higher, than among nurses and midwives in northern Ghana (69.3% and 64.9%) [8], although differences in instruments and cut-offs limit direct comparison. In Ibadan, Nigeria, where 80.2% of community health workers and birth attendants had poor knowledge and substantial proportions used sunlight or glucose water [9], most nurses in our study rejected both practices (80.5% and 87.2%). Even so, roughly one in five did not reject sunlight exposure and one in eight did not reject sugar water, practices that are not evidence-based and may delay effective treatment. Studies among mothers in Ethiopia and Ghana likewise show knowledge gaps that health workers are expected to address through counselling [10, 11]. By contrast, registered nurses in a Namibian neonatal intensive care unit and nurses in Duhok, Iraq, reported comparatively higher knowledge and more favorable attitudes than the nurses in our sample [12, 13]; both studies drew on small, single-site, non-probability samples with different instruments and cut-offs, so these comparisons are illustrative rather than definitive.

The weaker recognition of risk factors matters because risk-factor assessment underpins decisions on bilirubin measurement and follow-up [2, 3]. In sub-Saharan Africa, G6PD deficiency and blood-group incompatibility are important contributors to hyperbilirubinemia [5], so gaps in this domain may translate into missed high-risk newborns.

Higher knowledge and attitude levels among nurses with degree-level education, higher rank, and NICU placement are plausible, since formal education may strengthen clinical reasoning and NICU staff have more frequent exposure to jaundiced newborns and neonatal protocols. Experience (> 5 years) was associated with attitude in the unadjusted analysis but not after adjustment, suggesting confounding by rank and work unit. These associations are correlational: the design is cross-sectional, the sample is purposive, and the adjusted estimates are imprecise, so they should be regarded as hypothesis-generating. The strong correlation between knowledge and attitude is consistent with the KAP framework, but its direction cannot be determined.

The practice items illustrate the difficulty of measuring practice with single-response questions. During phototherapy, providing eye care and covering the eyes were both commonly selected, and overheating and dehydration are both recognized adverse effects [2, 3]; a single-choice format cannot capture the multiple actions required for competent care. In addition, 92.5% of nurses reported previous training on neonatal jaundice, yet important knowledge gaps persisted, indicating that training exposure should not be equated with competence.

These findings suggest that hospitals should provide competency-based training that emphasizes risk-factor assessment, age-specific bilirubin thresholds, phototherapy care, and safe-practice counselling, supported by accessible protocols, supervision, and routine clinical audit [2–4, 14]. Future studies should use a validated instrument with multiple-response scoring defined a priori, combine self-report with direct observation or clinical audit, and use larger probability-based samples across more facilities.

Strengths and limitations

Strengths include the inclusion of nurses from three hospitals in a setting where evidence is scarce, transparent scoring rules, and the use of both unadjusted and adjusted analyses. Several limitations should be considered. The purposive, hospital-based sample limits generalizability. All responses were self-reported, so social desirability bias is possible. Practice was measured with single-response items for clinically non-exclusive actions and no composite practice score was derived, so the study cannot make claims about overall practice quality or about associations between knowledge, attitudes, and practice. Scoring of “select all that apply” items against one designated answer may underestimate knowledge. The knowledge scale showed acceptable internal consistency (Cronbach’s $\alpha = 0.79$), whereas the attitude scale had lower internal consistency ($\alpha = 0.48$), which limits confidence in the attitude score as a reliable scale. Content validity was based on supervisory review rather than a formal psychometric validation process. Several cross-tabulations had sparse cells, and 14 chi-square tests were performed without correction for multiple comparisons. In the attitude model the smaller outcome

group (n = 34) gave fewer than five events per predictor, and some predictor categories were sparse, producing wide confidence intervals and possible instability. The cross-sectional design prevents causal inference.

Conclusions

Among 133 nurses in selected Mogadishu hospitals, 56.4% had good knowledge and 74.4% had good attitudes regarding neonatal jaundice management, and knowledge and attitude were positively correlated. Knowledge and attitude levels varied by education, rank, and work unit, and gaps were most evident for causes and risk factors of jaundice and for avoiding non-evidence-based home treatments. Reported practice indicators showed frequent exposure to jaundiced neonates. Hospitals should pair competency-based training with protocols, supervision, and audit, and future research should adopt a validated practice instrument combined with direct observation.

Abbreviations

CI
Confidence interval
G6PD
Glucose-6-phosphate dehydrogenase
NICU
Neonatal intensive care unit
OR
Odds ratio
SPSS
IBM Statistical Package for the Social Sciences
STROBE
Strengthening the Reporting of Observational Studies in Epidemiology.

Declarations

Ethics approval and consent to participate

The study was approved by the SIMAD University Research Ethics Committee. Permission was obtained from the participating hospitals, and all participants provided written informed consent. The study was conducted in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable. The manuscript contains no individually identifiable participant information.

Availability of data and materials

The de-identified dataset analysed during the current study is available from the corresponding author on reasonable request, subject to applicable ethical and institutional restrictions. The questionnaire used for data collection (Additional file 1) is available as supplementary materials.

Competing interests

The author declares that they have no competing interests.

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Authors' contributions

HAH conceived and designed the study, collected the data, performed the statistical analysis using SPSS, interpreted the findings, and wrote and revised the manuscript. The author read and approved the final manuscript.

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