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Self-Reported Everyday Cognitive Failures, Symptom Burden and Healthcare Use Among Adult Patients in Southwestern Nigeria: A Cross-Sectional Study

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Abstract

Self-reported everyday cognitive failures are common and may interfere with self-management of chronic illness, but evidence from clinical populations in sub-Saharan Africa is limited. We examined associations between cognitive failures and health symptom burden, functional limitation and healthcare utilisation among adults attending healthcare facilities in southwestern Nigeria. Multicentre cross-sectional survey across ten public hospitals in Lagos, Ogun and Oyo states, March–April 2016. The 25-item Cognitive Failures Questionnaire (CFQ; theoretical range 0–100) was the primary outcome (continuous). A study-specific questionnaire captured symptoms (fatigue, shortness of breath, pain; each 0–10), daily activity limitations (4 items × 0–4, range 0–16), healthcare utilisation (counts, past 6 months) and patient-activation confidence (0–12). Primary analysis was multivariable linear regression of continuous CFQ; logistic regression for high CFQ (CFQ > sample cut-point of 32) was a sensitivity analysis. Backward elimination ($p > .05$ for removal) was applied to an initial model that included age, sex, ethnicity, education, marital status and health indicators; the final reduced model retained health indicators only. Complete-case sample sizes are reported. Of 1,328 eligible attendees, 1,317 consented and 1,299 had a valid CFQ score ($M = 31.96$ years, $SD = 10.97$; 62.1% female). In all, 479/1,299 (36.9%) scored above the sample cut-point of 32 (Low CFQ ≤ 32, $n = 820$; High CFQ > 32, $n = 479$). In the final linear regression ($n = 1,053$; $R^2 = .132$), higher health-symptom composite ($B = 0.65$, 95% CI [0.31, 0.99], $p < .001$), fatigue ($B = 0.47$, 95% CI [0.07, 0.87], $p = .021$), daily activity limitations ($B = 1.21$, 95% CI [0.84, 1.58], $p < .001$) and recent hospitalisation ($B = 2.40$, 95% CI [0.68, 4.12], $p = .006$) were associated with higher CFQ; higher patient-activation confidence was associated with lower CFQ ($B = −0.58$, 95% CI [−0.90, −0.27], $p < .001$). The logistic sensitivity analysis ($n = 1,053$; AUC = .708) was directionally consistent. Greater symptom burden, functional limitation and recent hospitalisation were associated with more frequent self-reported cognitive failures; higher patient-activation confidence was associated with fewer failures after adjustment. The design cannot establish direction, and the CFQ does not measure objective cognitive impairment.

Keywords: cognitive failures · CFQ · symptom burden · functional limitation · healthcare utilisation · Nigeria · cross-sectional study

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Introduction

Cognitive functioning influences occupational performance, social engagement, decision making and independent living (Carrigan & Barkus, 2016). Even without overt neurological disease, individuals may report everyday cognitive failures, lapses of memory, attention, perception and motor control during tasks they would ordinarily perform successfully (Awofala & Ogundele, 2018; Goodman et al., 2022). Such subjective cognitive complaints are measured here by the Cognitive Failures Questionnaire (CFQ), which indexes the frequency of everyday lapses and does not establish objective cognitive impairment (Adeloye et al., 2019; Broadbent et al., 1982).

Self-reported cognitive difficulties track mood, pain and self-rated health at least as strongly as objective cognition (Burmester et al., 2016; Meyer et al., 2018). Little is known about their correlates among patients attending healthcare facilities in Nigeria. An earlier analysis of the same survey examined alcohol intake and cognitive complaints (Awofala & Ogundele, 2018); the present analysis addresses a distinct question on symptom burden, functional limitation and healthcare use.

We examined associations between CFQ score (outcome) and (i) symptom burden and activity limitation and (ii) healthcare use and patient activation, with adjustment for measured covariates. We hypothesised that greater symptom burden, activity limitation and hospitalisation would be associated with higher CFQ scores; the direction of association with patient activation was exploratory.

Methods

Study design, setting and participants

This multicentre cross-sectional survey was conducted across ten public hospitals (tertiary, general and community) in Lagos, Ogun and Oyo states, southwestern Nigeria, in March–April 2016. Ethical approval was granted by the Institutional Review Board of Tai Solarin University of Education. No formal approval reference number was issued by the committee, and the exact approval date is not available in retained documentation; approval was obtained before fieldwork commenced. Trained research assistants approached eligible patients (aged ≥ 18 years, stable outpatient presentation) in waiting areas; exclusion criteria were unstable acute illness, uncorrected sensory impairment precluding completion, impaired consciousness, severe head trauma/coma/neurosurgery, or severe neurodevelopmental disability. Informed consent was obtained; questionnaires were self-completed in English or Yoruba with assistant support as needed. Participant flow: 1,328 eligible attendees were approached; 1,317 consented (11 declined); 1,299 provided a valid CFQ score (18 consented participants had missing/incomplete CFQ). Complete cases for the primary regression model numbered 1,053 (246 additional participants missing on ≥1 covariate) (Figure 1).

Measurement

Cognitive Failures Questionnaire (CFQ): 25 items × 0 (never)–4 (very often), theoretical total 0–100. Observed scores ranged from 4 to 92 (M = 38.7, SD = 15.2); sample median = 32 (IQR = 25–39). For sensitivity analysis only: Low CFQ = CFQ ≤ 32 (n = 820), High CFQ = CFQ > 32 (n = 479; 36.9%); scores exactly at 32 assigned to Low. This cut-point is sample-specific, not a clinical threshold; tied values mean the groups are not a 50/50 split.

Health indicators: fatigue, shortness of breath and pain each scored 0–10 over the recall period. The health-symptom composite is the sum of these three items (range 0–30). Daily activity limitations: four items (mobility, self-care, usual activities, household tasks), each 0 (no limitation)–4 (unable), summed (range 0–16). Patient-activation confidence: three items (confidence in managing medication, keeping appointments, following treatment advice), each 0–4, summed (range 0–12). Healthcare utilisation (past 6 months): physician visits, number of hospitalisations, total hospital nights (counts). Chronic conditions (7 items) were self-reported physician diagnoses, dichotomised and summed into a multimorbidity count. The Yoruba version was produced by forward–backward translation and pilot testing; formal measurement invariance was not tested. Demographics: age, sex, education (5 levels), ethnicity (4 groups), marital status (5 categories).

Statistical analysis

Analyses used SAS 9.4. Descriptive statistics are mean ± SD; categorical variables are n (column %) within CFQ group with variable-specific denominators and missing counts (Table 1 base = 1,299 with valid CFQ). Bivariate comparisons used Welch/pooled t-tests with mean differences, 95% CIs and Cohen's d.

Primary analysis: multivariable linear regression of continuous CFQ. The initial model included age, sex, ethnicity, education, marital status and all health indicators. Backward elimination (p > .05 for removal) retained five health indicators; no demographic variable met the retention threshold,

so the final reduced model is adjusted for retained health indicators only, not for demographics. Unstandardised *B* with 95% CI is reported. Sensitivity analysis: multivariable logistic regression of High CFQ (>32) with the same selection procedure; AOR, 95% CI, Hosmer–Lemeshow test and ROC AUC are reported. Complete-case *n* is stated for each model. Missing data were handled by complete-case analysis; the resulting sample-size reduction is reported as a limitation.

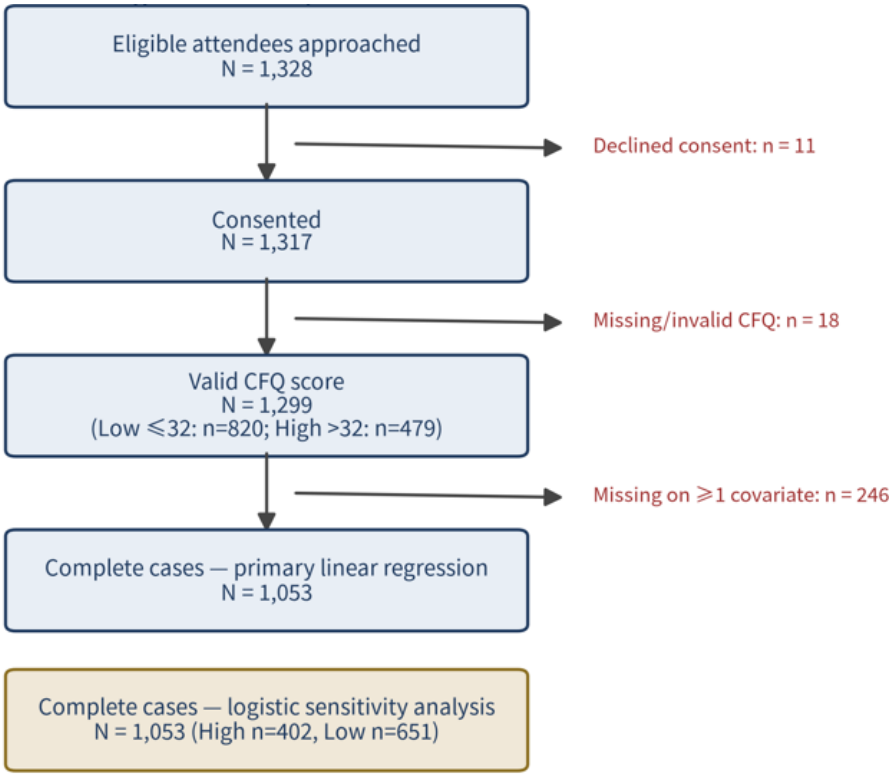


Figure 1. Participant flow

Results

CFQ observed scores ranged from 4 to 92 (*M* = 38.7, *SD* = 15.2; median = 32, IQR = 25–39). Mean age was 31.96 years (*SD* = 10.97); 62.1% were female. Age did not differ between CFQ groups (*M* = 31.8 vs. 32.2 years), *p* = .48.

Participant characteristics by CFQ group

Table 1 (base *n* = 1,299 with valid CFQ) shows that ethnicity (*p* < .001), education (*p* < .001), marital status (*p* = .043), self-rated health (*p* < .001) and cigarette status (*p* = .004) differed between groups. Sex (*p* = .065), family type (*p* = .104) and alcohol status (*p* = .087) did not. Self-rated health comprised four categories: Excellent, Very good, Good, Fair.

Table 1. Participant characteristics by CFQ group (base = 1,299 with valid CFQ; low + high + missing = 1,299 per row).

Variable	Low CFQ ≤ 32, *n* (%)	High CFQ > 32, *n* (%)	*p*	Missing (of 1,299)
Sex (*n* = 820/479)			.065	0
Male	295 (36.0)	197 (41.1)		
Female	525 (64.0)	282 (58.9)		
Ethnicity (*n* = 803/470)			< .001	26
Yoruba	664 (82.7)	332 (70.6)		
Hausa	20 (2.5)	29 (6.2)		
Igbo	90 (11.2)	94 (20.0)		
Other	29 (3.6)	15 (3.2)		

Variable	Low CFQ ≤ 32, *n* (%)	High CFQ > 32, *n* (%)	*p*	Missing (of 1,299)
Education (*n* = 790/468)			< .001	41
No formal education	13 (1.6)	1 (0.2)		
Primary	34 (4.3)	18 (3.8)		
Secondary	106 (13.4)	72 (15.4)		
College/NCE/Polytechnic	220 (27.8)	174 (37.2)		
University/BSc/HND	417 (52.8)	203 (43.4)		
Marital status (*n* = 810/470)			.043	19
Married	418 (51.6)	232 (49.4)		
Single	358 (44.2)	203 (43.2)		
Divorced	9 (1.1)	12 (2.6)		
Separated	8 (1.0)	13 (2.8)		
Widowed	17 (2.1)	10 (2.1)		
Family type (*n* = 758/414)			.104	127
Nuclear	547 (72.2)	278 (67.1)		
Extended	105 (13.9)	76 (18.4)		
Polygamous	106 (14.0)	60 (14.5)		
Alcohol status (*n* = 809/467)			.087	23
Never	420 (51.9)	230 (49.3)		
Former	116 (14.3)	89 (19.1)		
Current	273 (33.7)	148 (31.7)		
Cigarette status (*n* = 811/465)			.004	23
Never	682 (84.1)	361 (77.6)		
Former	64 (7.9)	63 (13.5)		
Current	65 (8.0)	41 (8.8)		
Self-rated health (*n* = 808/474)			< .001	17
Excellent	35 (4.3)	30 (6.3)		
Very good	111 (13.7)	76 (16.0)		
Good	269 (33.3)	193 (40.7)		
Fair	393 (48.6)	175 (36.9)		

Note. NCE = National Certificate in Education; HND = Higher National Diploma

Symptom burden and healthcare use

The High CFQ group reported more fatigue, shortness of breath, pain, daily activity limitations, physician visits, hospitalisations and hospital nights. Patient-activation confidence did not differ bivariately ($p = .33$) as shown in Table 2 below.

Table 2. Health indicators by CFQ group (Welch *t* tests).

Indicator	Low CFQ *n*, mean (*SD*)	High CFQ *n*, mean (*SD*)	Mean diff. (High−Low) [95% CI]	Cohen's *d*	*p*
Fatigue (0–10)	764, 3.36 (2.92)	468, 3.81 (2.61)	0.45 [0.13, 0.76]	0.16	.005
Shortness of breath (0–10)	763, 2.17 (2.65)	467, 3.04 (2.59)	0.87 [0.56, 1.17]	0.33	< .001
Pain (0–10)	771, 3.28 (2.79)	468, 3.75 (2.65)	0.47 [0.16, 0.79]	0.17	.003
Daily activity limitations (0–16)	816, 2.55 (3.22)	478, 4.47 (3.50)	1.92 [1.54, 2.29]	0.58	< .001
Patient-activation confidence (0–12)	816, 4.85 (3.77)	478, 5.05 (3.33)	0.20 [−0.21, 0.61]	0.06	.33
Physician visits (count)	732, 1.24 (1.83)	427, 1.53 (1.96)	0.29 [0.07, 0.52]	0.16	.012

Indicator	Low CFQ *n*, mean (*SD*)	High CFQ *n*, mean (*SD*)	Mean diff. (High−Low) [95% CI]	Cohen's *d*	*p*
Hospitalisations (count)	755, 0.25 (0.54)	451, 0.56 (0.76)	0.31 [0.23, 0.38]	0.49	< .001
Hospital nights (count)	745, 0.58 (1.55)	447, 1.33 (2.27)	0.76 [0.52, 0.99]	0.41	< .001

Multivariable linear regression

Final model (Table 3): $n = 1{,}053$; $R^2 = .132$; adjusted $R^2 = .128$; $F(5, 1047) = 31.73$, $p < .001$. The health-symptom composite includes fatigue; because fatigue is also a separate predictor, these two coefficients must be interpreted jointly, under additive linearity, a one-point increase in fatigue corresponds to a total CFQ difference of 0.65 + 0.47 = 1.12 points. Shortness of breath and pain were eliminated by backward elimination, so exact linear dependence (composite plus all three constituents) did not occur in the final model. Maximum VIF = 1.82; residual diagnostics showed no material violation. The overlap is acknowledged as a limitation.

Table 3. Adjusted linear regression of continuous CFQ total score ($n = 1{,}053$).

Predictor	*B* (95% CI)	*SE*	*p*
Health-symptom composite (0–30)	0.65 (0.31, 0.99)	0.17	< .001
Fatigue (0–10)	0.47 (0.07, 0.87)	0.20	.021
Daily activity limitations (0–16)	1.21 (0.84, 1.58)	0.19	< .001
Patient-activation confidence (0–12)	−0.58 (−0.90, −0.27)	0.16	< .001
Hospitalisations (count)	2.40 (0.68, 4.12)	0.88	.006

Note. *B* = unstandardised coefficient; *SE* = standard error.

Logistic sensitivity analysis

The logistic model of High CFQ (>32) used $n = 1{,}053$ (402 High, 651 Low); Hosmer–Lemeshow $\chi^2(8) = 9.49$, $p = .30$; AUC = .708. Fatigue was not retained in this model ($p = .45$). Results were directionally consistent with the linear model (Table 4; Figure 2).

Table 4. Adjusted logistic regression for High CFQ (>32), $n = 1{,}053$.

Predictor	AOR (95% CI)	*p*
Health-symptom composite	1.10 (1.05, 1.14)	< .001
Daily activity limitations	1.14 (1.09, 1.19)	< .001
Patient-activation confidence	0.93 (0.89, 0.96)	< .001
Hospitalisations	1.55 (1.24, 1.94)	< .001

Note. AOR = adjusted odds ratio; AUC = area under the ROC curve = .708.

Discussion

In this multicentre sample of predominantly young adult healthcare attendees in southwestern Nigeria, health-symptom burden, daily activity limitations and recent hospitalisation were associated with higher CFQ; higher patient-activation confidence was associated with lower CFQ after adjustment. These are cross-sectional associations, not causal effects. The 36.9% above the cut-point is sample-specific and not a clinical prevalence; the cut-point of 32 has no diagnostic utility.

Daily activity limitations were associated with higher CFQ scores. Reverse causation is plausible for healthcare-use and patient-activation variables; the patient-activation inverse association emerged only after adjustment ($B = −0.58$, $p < .001$) and is exploratory and confounded by illness severity. Functional impairment may increase self-monitoring and frustration, heightening the salience of minor mental slips; alternatively, shared negative affectivity or somatosensory amplification may predispose to over-reporting across somatic and cognitive domains (Broadbent et al., 1982; Meyer et al., 2018).

Ethnic variations should be interpreted cautiously. Age showed no group difference ($p = .48$). No objective cognitive testing was performed, so CFQ lapses cannot be distinguished from objective impairment, transient distress, somatic amplification.

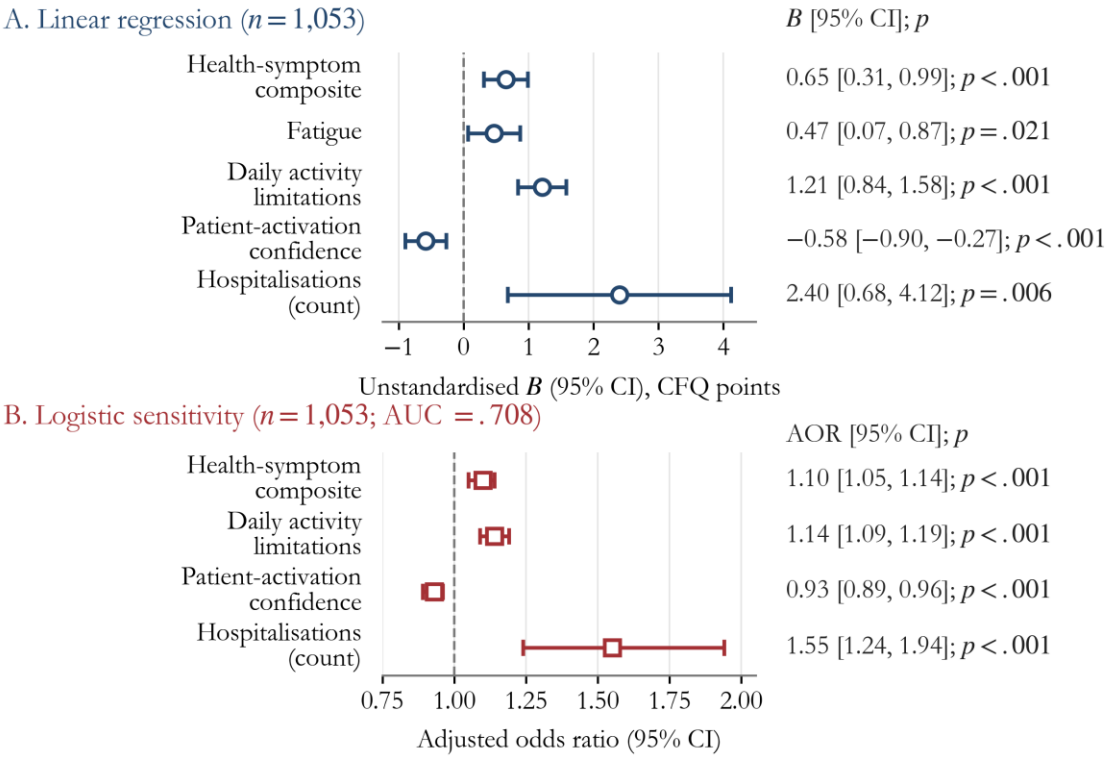


Figure 2. Adjusted associations with self-reported cognitive failures (CFQ). A. Linear regression of continuous CFQ (n = 1,053). *B*. Logistic sensitivity analysis for High CFQ > 32 (n = 1,053; AUC = .708). Error bars = 95% CIs. Coefficients are unstandardised; predictors are on different scales

Limitations: (1) cross-sectional, no temporal direction. (2) Self-report only, recall and social-desirability bias; interviewer-assistance bias possible. (3) Study-specific symptom questionnaire lacks formal validation; the Yoruba version underwent forward–backward translation and pilot testing but measurement invariance was not tested. (4) No objective cognitive testing. (5) Ten facilities in one region, limited generalisability. (6) Recruitment spanned ten facilities but models did not adjust for facility-level clustering; with ten clusters, CIs and p-values may be somewhat anti-conservative. (7) Demographic covariates were removed by backward elimination; the final model is not demographically adjusted, and residual confounding by sociodemographic factors cannot be excluded. (8) Fatigue appears both in the symptom composite and as a separate predictor; their coefficients must be interpreted jointly, and this overlap limits separate interpretation. (9) Complete-case analysis (n = 1,053); non-random missingness possible. (10) Binary split used only as sensitivity analysis.

Conclusion

Greater physical health symptom burden, daily activity limitations and recent hospitalisation were associated with more frequent self-reported cognitive failures; higher patient-activation confidence was associated with fewer failures after adjustment. Prospective longitudinal research with objective neuropsychological testing is required.

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Declaration of interests: The authors report there are no competing interests to declare.

Ethics approval: Institutional Review Board, Tai Solarin University of Education (no formal reference number issued; exact date not available in retained documentation; approval preceded fieldwork).

AI disclosure: generative AI (ChatGPT-4, OpenAI) was used for language editing and formatting only; scientific content and interpretation are the authors' sole responsibility.

Data availability: SAS output supporting all tables and models is provided as supplementary material.

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