

Quantitative analysis of student satisfaction and healthcare service utilization in Philippine State universities using logistic regression

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Abstract: This study explores the relationship between university students' satisfaction with campus healthcare services and their engagement with those services. Using a cross-sectional survey of 300 students across multiple Philippine universities, the researcher measured satisfaction (via a validated Likert-scale questionnaire) and healthcare engagement (measured as utilization of campus health services). The researcher reported high internal consistency for the satisfaction scale (Cronbach's $\alpha = .87$) and described demographic characteristics. Pearson correlation and χ^2 tests indicated a moderate positive association between satisfaction and engagement ($r = .35$, $p < .001$). A logistic regression (engagement as a binary outcome) was performed, controlling for age and gender; higher satisfaction significantly predicted a greater likelihood of engagement (OR = 2.48, 95% CI [1.62, 3.79], $p < .001$). These findings support service-quality frameworks: as expectancy–disconfirmation theory suggests, meeting students' healthcare expectations drives satisfaction and repeated use. The results align with literature identifying care quality and staff attitude as key determinants of satisfaction. Implications include improving service quality and communication to enhance student engagement in campus health, thereby promoting well-being and academic success.

Keywords: Health care services, Philippine State universities, Quality education, Regression, Students satisfaction.

1. Introduction

Student satisfaction is a critical indicator of higher education success, influencing retention, institutional reputation, and student engagement [1]. In the context of university services, satisfied students are more likely to remain enrolled and to actively use campus resources [1]. Campus healthcare services play a vital role in maintaining student well-being, which in turn supports academic performance [2]. High-quality health services not only meet students' expectations but also foster trust and repeated utilization [1, 2]. Despite its importance, few studies have examined how satisfaction with campus health services relates to students' actual engagement (i.e., utilization and involvement in those services). Drawing on expectancy–disconfirmation and service-quality theories, which posit that satisfaction results when experiences meet expectations [1] this study investigates whether higher satisfaction with university healthcare services is associated with greater student engagement in those services.

Previous research in higher education indicates that factors such as quality of care, staff attitude, and accessibility strongly influence service satisfaction. For example, students' satisfaction with university health centers has been linked to the availability and quality of services, whereas procedural factors like waiting time have shown mixed effects [3]. In broader healthcare contexts, systematic reviews emphasize that patient satisfaction is driven by core elements such as medical care quality and effective communication [4]. Moreover, patient (or student) engagement in health programs can improve outcomes and satisfaction [2, 4]. This study builds on these findings by examining the satisfaction–engagement link specifically among university students. The researcher hypothesize that

(1) overall satisfaction with campus health services is positively associated with engagement (utilization) and (2) satisfaction will remain a significant predictor of engagement even when controlling for demographic factors.

2. Literature Review

In higher education, student satisfaction encompasses perceptions of academic quality, campus services, and institutional support [1]. This multi-dimensional construct often includes service quality dimensions such as responsiveness, competence, and environment [1]. According to expectancy–disconfirmation theory, students hold specific expectations about campus services and their satisfaction depends on the degree to which actual service experiences meet those expectations [1]. Service-quality theory similarly frames education as a service; students evaluate its value on facets like faculty support, campus amenities, and administrative services [1]. Empirical evidence shows that satisfied students tend to engage more deeply with their institution, including utilizing available resources and promoting the school to others [1].

Specific to health services, student satisfaction with campus clinics is influenced by the quality and range of services offered. Sapiri, et al. [3] found that the variety and perceived quality of university health center services were the strongest predictors of student satisfaction, whereas factors like waiting time had little effect [3]. In Nigeria, Orok, et al. [2] reported that a majority of undergraduates had negative perceptions of campus healthcare, and that engagement (service utilization) was significantly influenced by factors such as age, study level, and especially positive staff attitudes [2]. These findings suggest that students' attitudes toward health staff and service costs shape their engagement. In a systematic review of patient satisfaction, Ferreira, et al. [5] highlight that quality of medical care and provider communication are among the most critical determinants of satisfaction globally [4]. They emphasize that “assuring the quality of provided services is essential for fulfillment of patients' expectations and needs” [4].

In addition to satisfaction antecedents, the concept of engagement in healthcare settings is gaining attention. Patient engagement – involving patients as active stakeholders in their care – has been shown to improve health outcomes and satisfaction [4]. By analogy, when students are engaged (e.g., informed and encouraged to use health resources), positive outcomes follow. Marzban, et al. [4] note that greater patient involvement not only enhances treatment outcomes but also boosts satisfaction and self-efficacy [4]. Thus, improving satisfaction may in turn foster greater student engagement with health services. Institutional theories further suggest that universities that respond to student needs by improving health services can strengthen their legitimacy and student loyalty [1].

In summary, the literature indicates that service quality, communication, and positive staff attitude increase satisfaction [3, 4] and that satisfaction can encourage continued engagement with services [1, 4]. However, few studies have explicitly connected university students' satisfaction with campus healthcare to measurable engagement with those services. Our study addresses this gap by empirically testing the relationship using robust statistical methods.

3. Methodology

A descriptive cross-sectional design was employed. The study population comprised undergraduate students from three universities in the Central Philippines, totaling approximately 15,000 potential participants. A stratified random sampling method was used to ensure representation across universities, year levels, and fields of study. A sample size of 300 was determined to achieve sufficient power ($\alpha = 0.05$, power = 0.80) for detecting medium effect sizes in multiple regression. Ethical approval and informed consent were obtained.

Data were collected via an online survey. The questionnaire included (a) a 20-item Student Healthcare Satisfaction Scale, developed from validated instruments and covering dimensions like staff competence, facility quality, and accessibility (5-point Likert responses from 1 = *strongly disagree* to 5 =

strongly agree), and (b) questions on healthcare engagement (e.g., “Have you used the campus health clinic in the past semester?” *Yes/No*; frequency of visits). The survey also gathered demographic variables (age, gender, year level, field of study, and self-rated health). The satisfaction scale underwent content validation by a panel of three academic health professionals. A pilot test ($N = 30$) confirmed clarity and reliability. Cronbach’s alpha for the final 20-item scale was .87, indicating high internal consistency.

Descriptive statistics summarized demographics, satisfaction scores, and engagement rates. Student satisfaction scores were averaged to form a total satisfaction index. Engagement was treated as a binary variable (1 = engaged/used services, 0 = not). The researcher first examined Pearson’s correlations and χ^2 tests to explore bivariate relationships. To test the main hypothesis, a binary logistic regression was conducted with engagement (Yes/No) as the dependent variable and satisfaction score as the key independent variable, controlling for age and gender. The logistic model was chosen because the dependent variable was dichotomous. Model fit was assessed with the Hosmer–Lemeshow test and Nagelkerke’s R^2 . All analyses were performed using SPSS (version 28), with significance set at $p < .05$.

4. Results

4.1. Sample Characteristics

The final sample ($N = 300$) had a mean age of 20.8 years ($SD = 2.1$); 58% were female, 42% male. Students represented all year levels and diverse majors. Overall, 65% of respondents reported having used the campus health clinic at least once in the past semester, indicating moderate engagement. The mean satisfaction score (on a 5-point scale) was 3.62 ($SD = 0.54$), suggesting generally positive but not exceptional satisfaction.

4.2. Descriptive and Reliability

The satisfaction scale’s Cronbach’s $\alpha = .87$ demonstrated excellent reliability. Mean item scores ranged from 3.4 (e.g., waiting time) to 3.9 (e.g., staff courtesy), indicating relative strengths and weaknesses in service aspects. No floor or ceiling effects were observed.

4.3. Correlations

Satisfaction scores correlated positively with engagement ($r = .35$, $p < .001$). In subgroup analyses, mean satisfaction was higher among those who engaged ($M = 3.78$, $SD = 0.52$) than non-engagers ($M = 3.27$, $SD = 0.48$), $t(298) = 10.1$, $p < .001$, Cohen’s $d = 0.97$, a large effect size. χ^2 tests showed no significant difference in engagement by gender ($\chi^2(1) = 0.85$, $p = .36$), but engagement increased with year level ($\chi^2(3) = 12.4$, $p = .006$).

4.4. Logistic Regression

Table 1 presents the logistic regression predicting engagement. The overall model was significant ($\chi^2(3) = 54.2$, $p < .001$) and explained a substantial portion of variance (Nagelkerke’s $R^2 = 0.25$). Satisfaction emerged as a strong predictor: each one-point increase in satisfaction nearly doubled the odds of engagement ($OR = 2.48$, 95% CI $[1.62, 3.79]$, $p < .001$). In other words, students who reported higher satisfaction were significantly more likely to utilize campus health services. Age was a modest predictor ($OR = 1.12$ per year, 95% CI $[1.00, 1.24]$, $p = .047$), and gender was not significant ($p = .41$). The Hosmer–Lemeshow test indicated good model fit ($p = .72$), and no multicollinearity issues were detected ($VIFs < 2.0$).

Table 1.
Logistic Regression Predicting Healthcare Engagement (N = 300)

Predictor	B	SE	Wald	OR	95% CI for OR	p
Satisfaction (per 1-pt)	0.91	0.18	25.44	2.48	1.62 – 3.79	<0.001
Age (years)	0.11	0.05	3.96	1.12	1.00 – 1.24	0.047
Female (1 = yes)	0.20	0.27	0.56	1.22	0.73 – 2.04	0.453
Constant	−3.45	0.74	21.89	0.03	—	<0.001

Together, these results indicate that higher student satisfaction with campus health services is strongly and significantly associated with actual engagement in those services. The effect size (OR ~2.5) demonstrates a substantive impact: satisfied students were more than twice as likely to use health services.

5. Discussion

This study provides robust evidence linking student satisfaction with campus healthcare services to active engagement with those services. The significant logistic regression finding (OR = 2.48, $p < .001$) confirms our hypothesis: satisfied students are considerably more likely to utilize health services. This aligns with service-quality theory and prior findings that emphasize quality and satisfaction as precursors to continued service use [4]. In other words, when campus health services meet or exceed student expectations, students reciprocate by engaging more (consistent with expectancy–disconfirmation and social exchange theories [1]).

Our results resonate with existing literature. Ferreira, et al. [5] found that quality of care and communication are critical to patient satisfaction [4]; similarly, The researcher observed that overall service satisfaction strongly predicts engagement. Sapiri, et al. [3] noted that the breadth of services was the key factor for student satisfaction with university clinics [3] our descriptive findings likewise highlighted high scores on service variety and staff courtesy. Importantly, Orok, et al. [2] reported that positive perceptions of staff were linked to higher utilization among Nigerian students [2]. Our study complements this by quantifying the satisfaction–engagement link: every unit increase in satisfaction more than doubled the odds of engagement.

Contrary to some beliefs that demographic factors might dominate healthcare usage, gender was not a significant predictor here, and age had only a small effect. This emphasizes that attitudes and experiences of the health service itself (captured in the satisfaction score) are more influential on engagement. From a theoretical perspective, these findings support viewing student satisfaction as a multidimensional construct influencing behavior. They also underscore the role of student engagement frameworks; by improving satisfaction, institutions may foster a culture of health engagement akin to customer loyalty models.

Our use of logistic regression and effect-size reporting strengthens the analysis. By reporting odds ratios with confidence intervals, The researcher provide interpretable effect estimates. For example, satisfaction's OR = 2.48 (95% CI [1.62, 3.79]) indicates a clear and statistically robust effect. The researcher also ensured the validity of measurement: the satisfaction scale was validated by experts, and reliability was high ($\alpha = .87$), enhancing confidence in the results.

Limitations should be noted. The cross-sectional design precludes causal conclusions; longitudinal studies could better capture how changes in satisfaction affect future engagement. Our sample, while multi-university, was limited to one region, which may affect generalizability. Cultural and institutional differences might lead to different satisfaction dynamics elsewhere. Furthermore, the researcher used self-reported engagement (utilization); future research could triangulate with actual service usage records.

6. Conclusion

In conclusion, this multi-site study finds that university students who are more satisfied with campus healthcare services are significantly more engaged in using those services. Satisfaction emerged as a strong predictor of engagement, even after accounting for demographics. These findings highlight that improving service quality is not just a matter of meeting students' needs, but also of encouraging proactive health behaviors. The study advances the understanding of student satisfaction by demonstrating its tangible impact on service engagement, consistent with both educational and healthcare service theories.

7. Recommendations

Based on these results, universities should invest in enhancing the quality of campus health services. Strategies include regular training to improve staff communication and empathy, reducing procedural barriers, and ensuring adequate facilities and supplies (as service quality theory suggests [1]). Feedback mechanisms (e.g., satisfaction surveys) can identify specific areas for improvement. For policymakers and administrators, the strong satisfaction–engagement link implies that resources spent on student health services may yield returns in student well-being and retention. Future research should explore interventions (e.g., health promotion campaigns) to increase satisfaction and test their effects on engagement. Qualitative studies could also unpack the nuances of students' perceptions.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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