

Exploring Patient Satisfaction with Pharmaceutical Care in Nampula City Public Healthcare Centers, Northern Mozambique

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Abstract

Introduction: In recent times, satisfaction studies have gained importance in the health sector as a way to monitor services and products. The main aim of this study was to explore patient satisfaction with pharmaceutical care provided in Nampula healthcare centers. **Material and Methods:** The study was conducted at the 25 de Setembro, 1° de Maio, and Muhala-Expansão healthcare centers in Nampula. The sample consisted of 381 patients, with 127 from each center, selected for accessibility. Data were collected through a questionnaire with an internal consistency of 0.816, calculated using McDonald's total Omega (ω). The analysis included frequencies, descriptive statistics (mean and standard deviation), and inferential statistics like Binary Logistic Regression. **Results:** Overall satisfaction was 3.62 ± 0.627 on a scale of 1 to 5, or 69.8%. The binary regression associated a higher education level with dissatisfaction (COR 0.204, 95% CI: -2.752 to -0.427) and living in Marrere (COR 0.083, 95% CI: -5.098 to 0.120) and Muahivir-Expansão (COR 0.589, 95% CI: -1.824 to 0.767) with dissatisfaction as well. **Conclusion:** Satisfaction was generally high, mainly influenced by the availability of medicines and medical supplies, and less by other factors such as healthcare center accessibility, facility quality, and relationships with pharmacy professionals. Although variables like sex, religion, age, marital status, profession, occupation, and the number of pharmacy visits in the last five years were not statistically significant for general satisfaction in this study, they should be considered in future studies as they are often linked to pharmaceutical satisfaction.

Keywords

Pharmaceutical Attention, Patient Sensitivity, Health Satisfaction

1. Introduction

The study of health satisfaction originated within the Japanese “total quality” culture of 1950, which prioritized “customer satisfaction” as the gold standard for service and product quality, aiming for loyalty and “customer return.” Health literature began incorporating this term starting in 1970 in the United States and England. An increase in satisfaction surveys among health service users was observed as an expression of the consumerism movement and the “total quality” culture, with the introduction of competitive elements in these countries’ health systems [1].

From 1980 to 2014, patient satisfaction studies have varied in approach, but the most important determinants of satisfaction are the quality and skill of health professionals, competence, physical environment of buildings, accessibility, regularity or continuity of services, hospital characteristics, and the outcome of interventions [2].

To this day, patient satisfaction is considered a key indicator of quality in healthcare services, especially within the increasingly prevalent paradigm of patient-centered care [3].

Satisfaction reflects the level of agreement between a patient’s expectations and their actual experience with healthcare services. Assessing patient satisfaction can be complex, as it is influenced by various factors such as sociodemographics, previous healthcare experiences, and expectations. Understanding these determinants related to patient satisfaction is crucial [4].

The European Pharmaceutical Care Network defines Pharmaceutical Care as the pharmacist’s contribution to optimizing medicine use and improving health indicators. Its purpose is to achieve or define indicators to improve or maintain patients’ quality of life [5].

A study at the public service pharmacy of the Debre Tabor Comprehensive Specialized Hospital in Ethiopia found a general satisfaction with pharmaceutical care of 50.9%. This is considered low compared to Brazil (58.4%), South Korea (74.6%), Spain (76%), and the United Arab Emirates (77.1%). The study suggested that users of pharmaceutical care in developing countries may be less satisfied compared to those in developed countries [6]. In Tanzania, a survey conducted in public pharmacies across four health units in Dar-es-Salam reported that 46% of patients classified all services as good [7]. Meanwhile, a survey at a university hospital in Vigo, Spain, reported an overall satisfaction of 95% [8].

Generally, developing countries have lower satisfaction with healthcare compared to developed countries. This is particularly true in African countries, where many lack questionnaires developed at the health authority level to measure patient satisfaction with services. In Mozambique, consultations with the Provincial Health Directorate of Nampula and the National Medicines Regulatory Authority revealed that no national questionnaire exists to assess patient satisfaction with pharmaceutical care. This research aims to explore satisfaction with these services among patients in the city of Nampula. The data can guide the creation of a

questionnaire at local and national levels and serve as a baseline and incentive for the pharmaceutical sector.

2. Materials and Methods

Basic research was conducted for its purpose, quantitative for data analysis, exploratory for objectives, and field research for procedures.

Patients were from the three largest health centers in Nampula, Mozambique: Muhala-Expansão Health Center, 25 de Setembro Health Center, and 1° de Maio Health Center.

According to the Provincial Health Directorate, the average attendance at the three health centers in the last quarter of 2023, when the research project was approved, was 39,803. Using Cochran's formula in Epi Info v. 7.2.5.0, the study sample was determined. With an expected satisfaction frequency of 50%—due to the lack of previous Mozambican studies on patient satisfaction with pharmaceutical care in public service pharmacies—a margin of error of 5%, a confidence level of 95%, and a design effect of 1.0, a total sample of 381 patients was divided into three clusters of 127 patients each. The sample was collected between July and September 2024. A pilot study was conducted in June 2024 at the Marrere healthcare center, involving 52 patients.

The inclusion criteria were patients aged 18 years or older who had been seen in the public service pharmacies of the health centers under study at the time of data collection and agreed to participate in the study. The exclusion criteria included patients who lacked the mental capacity to answer the questionnaire, those who wanted to withdraw, or those in an uncomfortable situation to answer the questionnaire.

A questionnaire was developed with 26 questions related to satisfaction and others related to sociodemographic aspects. The 26 questions used a Likert scale: very satisfied “5,” satisfied “4,” no opinion “3,” dissatisfied “2,” and very dissatisfied “1.” They were subdivided into three dimensions: accessibility of the pharmacy, availability of medicines and medical items, and the relationship between professional and patient (Appendix). The questions were evaluated by 10 professionals who work or have worked in public pharmacies across various health units. A consensus model was adopted among all professionals consulted. The reliability of the questionnaire was determined using McDonald's total Omega (ω_t) internal consistency test, which was 0.816.

Data analysis was performed using SPSS v.21 and JASP 0.18.3.0. Frequencies of sociodemographic variables and satisfaction summaries were presented. Means and standard deviations of age and all items in the satisfaction questionnaire were calculated. Inferential relationships based on binary logistic regression were analyzed between sociodemographic data and satisfaction data, considering a P-value < 0.05. Overall satisfaction for each participant was obtained from the rounded average of all satisfaction items, then summarized into two categories: dissatisfied (“1, 2, and 3”) and satisfied (“4 and 5”). These categories were used to calculate

overall patient satisfaction.

The study received ethical approval from the Unilúrio Institutional Health Bioethics Committee (CIBSUL).

3. Results

3.1. Patient Satisfaction

Table 1 presents the sociodemographic data of the participants, who are mostly female (61.4%), with an average age of 27 years. Most are single (56.4%), Christian (50.4%), and have secondary education (61.9%). Nearly all are without any occupation (62.2%) and are distributed across almost all neighborhoods of Nampula.

Table 1. Sociodemographic variables.

Variable	N	Frequency	Percent	Variable	N	Frequency	Percent
Sex				Profession or Occupation			
Masculine	381	147	38.6	Public employee	381	31	8.1
Feminine		234	61.4	Private worker		25	6.6
Marital status				Self-employed		68	17.8
Married	381	151	39.6	None		237	62.2
Single		215	56.4	Other	20	5.2	
Divorced		7	1.8	Neighbourhood of residence			
Widower/Widow		7	1.8	Mutauanha	27	7.1	
Other		1	0.3	Napipine	16	4.2	
Religion				Muatala	31	8.1	
Christian	381	192	50.4	Namicopo	26	6.8	
Muslim		184	48.3	Namutequelua	63	16.5	
Other		5	1.3	Muhala	22	5.8	
Education level				Muhala-Expansão	381	44	11.5
Primary	381	51	13.4	Muahivir		29	7.6
Secondary		236	61.9	Muahivir-Expansão		44	11.5
Graduated		57	15.0	Marrere		4	1
None		23	6.0	Murrapaniua 1	22	5.8	
Other		14	3.7	Murrapaniua 2	9	2.4	
Use of pharmacies in the last 5 years				Natikiri	12	3.1	
1 - 4	381	174	45.7	Other	32	8.4	
5 - 9		123	32.3	Age			
10 - 14		36	9.4	Participants age	381	27.43 ± 8.884	18 - 67
More than 14		48	12.6				

Additionally, 54.3% of patients have already used the health centers under study at least five times. **Tables 2-4** present the average satisfaction scores for the three dimensions explored. Satisfaction with access and quality of facilities was 3.85, with the availability of medicines and medical items was 4.05, and with staff was 3.13. The overall average for the three dimensions was 3.62. While satisfaction with access and facility quality was close to the satisfied level, issues with the number and cleanliness of WCs contributed to a lower average. The highest satisfaction was observed in the availability of medicines and medical items. Variables such as the fairness of the price, confidence in pharmacy medicines and items, and the perception of the quality of these products contributed to the highest satisfaction rates. The lowest satisfaction average was observed in the dimension of satisfaction with staff. The final response revealed that people rated this dimension as “no opinion,” which could be interpreted as a sign of dissatisfaction. Variables such as the ability of professionals to explain the importance of taking medicines, possible adverse effects, provide additional information, and ensure patients understand the instructions were rated with a low average of satisfaction. These issues raise questions about staff quality, the ratio of staff to patients attended daily, and the quality of the relationship between pharmacy staff and patients at healthcare centers. Almost 95% of the sample said they had nothing to add, while others emphasized the WC issue. **Table 5** presents data on general satisfaction, with 30.2% of the sample dissatisfied and 69.8% satisfied. Despite this high level of satisfaction, some issues should not be ignored, such as problems with the restrooms in healthcare centers and the relationship between pharmacy staff and patients.

Table 2. Satisfaction with access and quality of facilities where services are provided.

	N	Mean	Std. Deviation
Are you satisfied with the distance between the pharmacy and your neighborhood?	381	3.46	1.533
Are you unhappy with the distance between the pharmacy and the public transport stop?	381	4.46	1.034
Does the pharmacy have parking for cars, motorbikes, or bicycles?	381	3.35	1.468
Is the pharmacy easily accessible from the health center?	381	4.45	0.886
Are you dissatisfied with the cleanliness of the medication waiting area?	381	3.93	1.273
Are you satisfied with the number of restrooms in the waiting area?	381	2.72	1.304
Are you dissatisfied with the cleanliness of the restrooms in the waiting area?	381	2.64	1.344
Do you find the medication waiting area comfortable?	381	4.12	1.124
Are you satisfied with the number of seats in the pharmacy waiting area?	381	3.94	1.318
Does the service desk make you feel comfortable discussing all your concerns with the professional?	381	4.28	1.123
Does the service desk allow you to hear all explanations during the service?	381	4.24	1.158
Are you dissatisfied with the pharmacy's opening hours?	381	4.66	0.680
Dimension mean		3.85	0.671
Valid N (listwise)	381		

Table 3. Satisfaction with the availability of medicines and medical items.

	N	Mean	Std. Deviation
Does the pharmacy have all the medications and medical items prescribed to patients?	381	3.46	1.568
Are you satisfied with the packaging of the medicines or medical items you receive?	381	3.46	1.583
Are the medicines and medical items dispensed by the pharmacy of poor quality?	381	4.23	1.041
Do you trust this pharmacy's medicines and medical items?	381	4.47	0.844
Is the price of medicines and medical items unfair?	381	4.71	0.744
Are you unhappy with the waiting time at the pharmacy to get your medicines?	381	3.96	1.361
Are you satisfied with the label and the clear explanation you received about the medicines and medical items?	381	4.07	1.325
Dimension mean		4.05	0.474
Valid N (listwise)	381		

Table 4. Satisfaction with the performance of pharmacy staff.

	N	Mean	Std. Deviation
Are you satisfied with the respect and courtesy you received from the professional?	381	4.48	1.325
Did the professional listen carefully to what you had to say?	381	3.68	1.418
Did the professional explain why the medication is taken and why it is important to follow the instructions?	381	2.61	1.590
Did the professional explain the adverse effects of the medications?	381	1.86	1.224
Did the professional provide additional information?	381	2.09	1.348
Did the professional ensure you understood the explanation?	381	2.96	1.689
Did you feel confident in the accuracy of the information provided by the professional?	381	4.29	1.149
Dimension mean		3.13	1.038
Mean of all dimensions		3.62	0.627
Valid N (listwise)	381		

Table 5. General satisfaction.

	Frequency	Percent	Valid Percent	Cumulative Percent
Dissatisfied	115	30.2	30.2	30.2
Valid Satisfied	266	69.8	69.8	100.0
Total	381	100.0	100.0	

Note: Dissatisfied answer considered "1, 2, 3" and satisfied "4, 5".

3.2. Association between Social Variables and General Satisfaction

Table 6 and **Table 7** present the possible relationships between sociodemographic variables and general patient satisfaction. Before performing binary logistic regression, a Spearman's bivariate correlation was conducted between sociodemographic variables and general satisfaction. Correlations with a P-value < 0.20 were included in the binary logistic regression. The variables age and marital status had

P-values above 0.20, specifically 0.609 and 0.201, respectively. Of the six categorical variables considered in the regression, two were significantly associated with general satisfaction: education level and living neighborhood. According to the Crude Odds Ratio (COR), the female sex had a COR of 2.245 (95% CI: 0.242 - 1.375), which was statistically insignificant. Patients of the Muslim religion showed statistically insignificant results, COR (4.053, 95% CI: 0.808 - 1.992). Graduates were associated with higher levels of dissatisfaction regarding education, COR (0.204, 95% CI: -2.752 - -0.427). Private workers were the most dissatisfied regarding profession, but this was also statistically insignificant, COR (0.589, 95% CI: -1.824 - 0.767). Regarding location, patients living in Marrere, COR (0.083, 95% CI: -5.098 - 0.120), and Muahivir-Expansão, COR (0.589, 95% CI: -1.824 - 0.767), were linked to dissatisfaction. Analyzing the frequency of pharmacy visits over the past five years, patients who visited 10 - 14 times were the most satisfied, but the results were statistically insignificant, COR (2.862, 95% CI: -0.185 - 2.289).

Table 6. Model summary of binary regression between sociodemographic variables and general satisfaction.

Model Summary - General satisfaction										
Model	Deviance	AIC	BIC	df	X ²	P	McFadden R ²	Nagelkerke R ²	Tjur R ²	Cox & Snell R ²
H ₀	466.659	468.659	472.601	380						
H ₁	356.110	412.110	522.509	353	110.548	<0.001	0.237	0.357	0.271	0.252

Table 7. Coefficients.

Coefficients										
	Estimate	Standard Error	Odds Ratio	z	Wald Test			95% Confidence interval		
					Wald Statistic	df	P	Lower bound	Upper bound	
(Intercept)	0.308	0.872	1.360	0.353	0.125	1	0.724	-1.400	2.016	
Sex (Feminine)	0.809	0.289	2.245	2.798	7.827	1	0.005	0.242	1.375	
Religion (Muslim)	1.400	0.302	4.053	4.634	21.470	1	<.001	0.808	1.992	
Religion (Others)	-0.817	1.077	0.442	-0.759	0.576	1	0.448	-2.928	1.293	
Education level (secondary)	-0.510	0.474	0.601	-1.076	1.157	1	0.282	-1.438	0.419	
Education level (Graduate)	-1.589	0.593	0.204	-2.680	7.180	1	0.007	-2.752	-0.427	
Education level (None)	-0.175	0.789	0.839	-0.222	0.049	1	0.824	-1.722	1.371	
Education level (Other)	0.127	0.825	1.136	0.154	0.024	1	0.877	-1.490	1.745	
ProfOccup (Private worker)	-0.529	0.661	0.589	-0.800	0.640	1	0.424	-1.824	0.767	
ProfOccup (Self-employed)	-0.156	0.564	0.855	-0.277	0.077	1	0.781	-1.262	0.949	
ProfOccup (None)	0.102	0.527	1.108	0.194	0.038	1	0.846	-0.930	1.135	
ProfOccup (Other)	-0.233	0.769	0.792	-0.304	0.092	1	0.761	-1.740	1.274	
Neighbourhood (Napipine)	0.384	0.771	1.468	0.498	0.248	1	0.618	-1.127	1.894	

Continued

Neighbourhood (Muatala)	0.469	0.654	1.598	0.717	0.514	1	0.473	-0.813	1.751
Neighbourhood (Namicopo)	0.667	0.816	1.949	0.818	0.669	1	0.413	-0.931	2.266
Neighbourhood (Namutequeliua)	0.318	0.611	1.375	0.521	0.271	1	0.602	-0.880	1.517
Neighbourhood (Muhala)	-0.066	0.706	0.936	-0.094	0.009	1	0.925	-1.450	1.317
Neighbourhood (Muhala-expansao)	0.544	0.640	1.723	0.851	0.723	1	0.395	-0.710	1.798
Neighbourhood (Muahivir)	-0.670	0.652	0.512	-1.028	1.056	1	0.304	-1.947	0.608
Neighbourhood (Muhavir-expansao)	-1.429	0.609	0.240	-2.346	5.502	1	0.019	-2.622	-0.235
Neighbourhood (Marrere)	-2.489	1.331	0.083	-1.870	3.496	1	0.062	-5.098	0.120
Neighbourhood (Murrapaniua 1)	0.480	0.669	1.616	0.717	0.514	1	0.473	-0.832	1.791
Neighbourhood (Murrapaniua 2)	-0.304	0.929	0.738	-0.327	0.107	1	0.743	-2.125	1.517
Neighbourhood (Natikiri)	0.228	0.825	1.256	0.276	0.076	1	0.782	-1.389	1.845
Neighbourhood (Other)	0.311	0.685	1.365	0.454	0.206	1	0.650	-1.031	1.653
NV5 (5 - 9)	0.818	0.333	2.266	2.459	6.048	1	0.014	0.166	1.470
NV5 (10 - 14)	1.052	0.631	2.862	1.666	2.776	1	0.096	-0.185	2.289
NV5 (More than 14)	-0.949	0.414	0.387	-2.291	5.248	1	0.022	-1.762	-0.137

Note. General Satisfaction level “Satisfied” coded as class 1. ProfOccup: Profession or Occupation. NV5: Number of visits to the pharmacy in the last five years.

4. Discussion

Reliability was assessed using McDonald’s total omega internal consistency test, as recommended for questionnaires where tau-equivalence is unknown. Several studies often use Cronbach’s alpha, which assumes tau-equivalence and does not consider the factor loadings of each variable [9] [10]. In this initial exploration of the local reality of Nampula, McDonald’s total omega was deemed appropriate to approximate the questionnaire’s internal consistency. In the future, with validation, using Cronbach’s alpha, McDonald’s test, or Guttman’s test interchangeably could be more acceptable.

Overall satisfaction was almost 70% (3.62 ± 0.627), which is very good. However, satisfaction was more influenced by the availability of medicines and medical items, with an average of 4.05. The accessibility of health centers and the quality of facilities had an average of 3.85, which falls in the satisfied category. The relationship with staff had a lower average of 3.13, indicating dissatisfaction with the pharmacy staff. These results suggest that if the research were extended to various healthcare centers in the suburban regions of Nampula city or rural areas of the province, satisfaction levels could drop to those seen in some African and Asian countries, between 40% and 50%. As reported by Ayele *et al.* (2020) in 13 public hospitals in eastern Ethiopia, overall satisfaction was 46.19% [11]. In other surveys, 46% overall satisfaction was reported in public hospitals in Dar-es-Salaam, Tanzania, and 50.1% in a specialized hospital in Ethiopia [7] [12]. In rural African regions, accessing medicines and medical items is usually more difficult. The

availability of medicines and medical supplies contradicted expectations according to the literature. Sachy *et al.* (2018) reported that pharmaceutical care in Mozambique is not of high quality due to complex interactions among various entities, characterized by operational fragmentation, overlapping activities, centralization of medication acquisition by a few agents, bypassing national structures, and neglecting the necessary strengthening of the national health system to build autonomy [13]. A plausible explanation is that a medical prescription costs 5 MZN, approximately \$0.081, in public health centers in Mozambique. This cost makes patients feel satisfied with aspects related to medicines, despite the common problem of medicine availability in Mozambique and many African, Asian, and Latin American countries, where most developing countries are located.

Regarding satisfaction with access to pharmacies and the quality of facilities, there is widespread dissatisfaction in many African, Asian, and Latin American countries. For example, Ismail *et al.* (2020) reported an average satisfaction score of 5.86 for access to pharmacies on a scale of 1 to 10 in three public health units in Saudi Arabia [14]. Soeiro *et al.* (2017) reported 49.5% satisfaction with the accessibility of pharmacies in public health units in Brazil, based on a sample of 8,803 users [15]. In Tanzania, Jande *et al.* (2013) reported that 50% of waiting rooms in four public health units in Dar-es-Salaam lacked bathrooms, and one waiting room did not have chairs for patients. Dissatisfaction with the absence of bathrooms was a significant issue in this study [7].

Regarding the relationship between professionals and patients, Sachy *et al.* (2018) state that one difficulty in pharmaceutical assistance in Mozambique is the scarcity of adequately trained human resources to deal with multiple matters [13]. This is probably the reason for the dissatisfaction in the present study. But dissatisfaction in the relationship between patients and pharmacy professional seems to be a very specific problem for each healthcare institution, making it very difficult to make a generalization, for example, Li *et al.* (2020) reported dissatisfaction among patients treated in tertiary hospitals, considered the high-quality hospitals in China [16]. Despite being an Asian country, China is considered the second richest country in the world. Soeiro *et al.* (2017) reported that satisfaction with interpersonal aspects in primary healthcare in Brazil was 90.5% [15]. Another survey indicated that a lack of empathy among professionals in Bangladesh contributes to citizens distancing themselves from public health services [17]. A similar study in Saudi Arabia, conducted across 12 healthcare units in the Al-Jouf region, found that the primary cause of patient dissatisfaction was their relationship with professionals, scoring 3.91 ± 0.77 on a scale of 1 to 5 [18]. However, Alomi *et al.* (2016) reported that in three primary healthcare centers in Saudi Arabia, the relationship between patients and pharmacy professionals was a major reason for patient satisfaction, scoring 4.13 on the same scale [19].

The binary regression associated a graduate level of education with dissatisfaction and linked living in Marrere and Muahivir-Expansão with dissatisfaction as well. The Muslim religion was associated with satisfaction in pharmaceutical care.

Ismail *et al.* (2020) reported that among the sociodemographic variables influencing satisfaction with pharmacy services, a high level of education was notable, as it was linked with dissatisfaction in outpatient pharmacies in Malaysia [14]. Surur *et al.* (2015) reported that patients with higher education were among the groups dissatisfied with the services of an outpatient pharmacy at a university hospital in northwestern Ethiopia [20]. Soeiro *et al.* (2017) found that patients living in cities were much more satisfied with pharmaceutical services, possibly because these services are more organized than in rural areas [15]. Probably that's why, in this study, only two neighborhoods were statistically linked to dissatisfied responses, both located in the city of Nampula.

The variables sex, religion, age, marital status, profession or occupation, and number of visits to pharmacies in the last five years were not significant to general satisfaction in this study. However, these variables could be linked to patient satisfaction in other research. For example, in the Brazilian context, services receive more criticism from women, who are good informants for surveys. Women are generally more open to surveys, possibly due to a high interest in self-care and care for others or because of a lower labor force participation rate in that society [15]. Molla *et al.* (2022) studied religion and reported that it was not associated with patients' satisfaction. They found that Orthodox, Muslim, and Protestant religions were not associated with patient satisfaction [6]. Kamara *et al.* (2016) reported that an ANOVA test revealed a significant statistical difference in satisfaction with health services when comparing demographic variables such as training and occupation [21]. Surur *et al.* (2015) also used ANOVA and reported significant statistical differences related to occupation and age. Elderly patients demonstrated greater satisfaction [20]. Nigussie and Edessa (2018) reported that marital divorce was associated with dissatisfaction among outpatients receiving pharmacy services at two public hospitals in eastern Ethiopia [22]. Kebede *et al.* (2021) demonstrated that the frequency of visits was associated with positive satisfaction. Patients visiting the public hospitals in Dessie town for the first time reported twice as much satisfaction [23]. These variables should be considered for future research despite their statistical insignificance in relation to general satisfaction in this study. It may be better to consider age clusters to assess their influence on satisfaction. This categorization could highlight differences and simplify the analysis. Almost all studies related to pharmaceutical care satisfaction use age as a categorical variable. Even living areas could be similarly categorized, for example, into urban, suburban, rural, and other classifications.

5. Strengths and Limitations of the Study

This study is one of the first of its kind conducted in Nampula, Mozambique, and can serve as a baseline for future research and the development and validation of a questionnaire to monitor satisfaction with pharmacists' care. The researchers consulted with health structures managing pharmaceutical care at local and national levels and reported that Mozambique does not yet have a national questionnaire of this nature.

Despite the researchers' efforts, resources were insufficient to conduct sampling for the entire province or city of Nampula, which was the initial plan. Additionally, the study is cross-sectional, necessitating replications throughout the year to monitor fluctuations in results. Quantitative studies limit patients' ability to fully express their feelings and thoughts on the studied subjects, as responses are mostly predetermined by the researchers. Future research should include qualitative or mixed methods. Finally, the slow bureaucratic processes required to advance research can be demoralizing, compounded by patients' reluctance to participate in questionnaires.

6. Conclusions

Overall satisfaction was 69.8%, influenced most by the availability of medicines and medical items (average of 4.1), less by access and quality of facilities (average of 3.9), and least by the relationship with healthcare professionals at the pharmacy (average of 3.1). In fact, patients were dissatisfied with their relationship with the pharmacy staff at the healthcare centers under study. The exploratory questionnaire developed had very good internal consistency, with a score of 0.816.

The binary regression associated a graduate level of education with dissatisfied answers and linked living in Marrere and Muahivir-Expansão with dissatisfaction as well. The variables of sex, religion, age, marital status, profession, or occupation, and the number of visits to pharmacies in the last five years were not significant to general satisfaction in this study. However, these variables have been linked with patient satisfaction in other researches. They should be considered for future research, as many studies in this field report the opposite.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Esperidião, M.A. and Viera-da-Silva, L.M. (2018) A satisfação do usuário na avaliação de serviços de saúde: Ensaio sobre a imposição de problemática. *Saúde em Debate*, **42**, 331-340. <https://doi.org/10.1590/0103-11042018s223>
- [2] Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M.M. and Amenta, P. (2016)

- Determinants of Patient Satisfaction: A Systematic Review. *Perspectives in Public Health*, **137**, 89-101. <https://doi.org/10.1177/1757913916634136>
- [3] Bratkowska, K., Religioni, U., Krysiński, J. and Merks, P. (2020) Quality of Pharmaceutical Services in Independent Pharmacies and Pharmacy Chains in Poland from the Patient Perspective. *Patient Preference and Adherence*, **14**, 2459-2467. <https://doi.org/10.2147/ppa.s284014>
- [4] Chavane, L., Dgedge, M., Bailey, P., Loquiha, O., Aerts, M. and Temmerman, M. (2016) Assessing Women's Satisfaction with Family Planning Services in Mozambique. *Journal of Family Planning and Reproductive Health Care*, **43**, 222-228. <https://doi.org/10.1136/jfprhc-2015-101190>
- [5] de Mendonça Lima, T., Aguiar, P.M. and Storpirtis, S. (2018) Evaluation of Quality Indicator Instruments for Pharmaceutical Care Services: A Systematic Review and Psychometric Properties Analysis. *Research in Social and Administrative Pharmacy*, **14**, 405-412. <https://doi.org/10.1016/j.sapharm.2017.05.011>
- [6] Molla, M., Sisay, W., Andargie, Y., Kefale, B. and Singh, P. (2022) Patients' Satisfaction with Outpatient Pharmacy Services and Associated Factors in Debre Tabor Comprehensive Specialized Hospital, Northwest Ethiopia: A Cross-Sectional Study. *PLOS ONE*, **17**, e0262300. <https://doi.org/10.1371/journal.pone.0262300>
- [7] Jande, M., Liwa, A., Kongola, G. and Justin-Temu, M. (2013) Assessment of Patient Satisfaction with Pharmaceutical Services in Hospital Pharmacies in Dar es Salaam, Tanzania. *East and Central African Journal of Pharmaceutical Sciences*, **16**, 24-30.
- [8] Martínez-López-de-Castro, N., Álvarez-Payero, M., Martín-Vila, A., Samartín-Ucha, M., Iglesias-Neiro, P., Gayoso-Rey, M., et al. (2017) Factors Associated with Patient Satisfaction in an Outpatient Hospital Pharmacy. *European Journal of Hospital Pharmacy*, **25**, 183-188. <https://doi.org/10.1136/ejhpharm-2016-001192>
- [9] Cho, E. and Kim, S. (2014) Cronbach's Coefficient Alpha: Well Known but Poorly Understood. *Organizational Research Methods*, **18**, 207-230. <https://doi.org/10.1177/1094428114555994>
- [10] Cho, E. (2016) Making Reliability Reliable: A Systematic Approach to Reliability Coefficients. *Organizational Research Methods*, **19**, 651-682. <https://doi.org/10.1177/1094428116656239>
- [11] Ayele, Y., Hawulte, B., Feto, T., Basker, G.V. and Bacha, Y.D. (2020) Assessment of Patient Satisfaction with Pharmacy Service and Associated Factors in Public Hospitals, Eastern Ethiopia. *SAGE Open Medicine*, **8**. <https://doi.org/10.1177/2050312120922659>
- [12] Semegn, S. and Alemkere, G. (2019) Assessment of Client Satisfaction with Pharmacist Services at Outpatient Pharmacy of Tikur Anbessa Specialized Hospital. *PLOS ONE*, **14**, e0224400. <https://doi.org/10.1371/journal.pone.0224400>
- [13] Sachy, M., Almeida, C. and Pepe, V.L.E. (2018) Assistência Farmacêutica em Moçambique: A ajuda externa na provisão pública de medicamentos. *Ciência & Saúde Coletiva*, **23**, 2277-2290. <https://doi.org/10.1590/1413-81232018237.09332018>
- [14] Ismail, A., Gan, Y.N. and Ahmad, N. (2020) Factors Associated with Patient Satisfaction Towards Pharmacy Services among Out-Patients Attending Public Health Clinics: Questionnaire Development and Its Application. *PLOS ONE*, **15**, e0241082. <https://doi.org/10.1371/journal.pone.0241082>
- [15] Soeiro, O.M., Tavares, N.U.L., do Nascimento Júnior, J.M., Guerra Junior, A.A., Costa, E.A., de Assis Acurcio, F., et al. (2017) Patient Satisfaction with Pharmaceutical Services in Brazilian Primary Health Care. *Revista de Saúde Pública*, **51**, 21s. <https://doi.org/10.11606/s1518-8787.2017051007145>

- [16] Li, Y., Gong, W., Kong, X., Mueller, O. and Lu, G. (2020) Factors Associated with Outpatient Satisfaction in Tertiary Hospitals in China: A Systematic Review. *International Journal of Environmental Research and Public Health*, **17**, Article 7070. <https://doi.org/10.3390/ijerph17197070>
- [17] Mohiuddin, A.K. (2020) Patient Satisfaction with Healthcare Services: Bangladesh Perspective. *International Journal of Public Health Science*, **9**, 34-45. <https://doi.org/10.11591/ijphs.v9i1.20386>
- [18] Alotaibi, N.H., Alzarea, A.I., Alotaibi, A.M., Khan, Y.H., Mallhi, T.H., Alharbi, K.S., et al. (2021) Exploring Satisfaction Level among Outpatients Regarding Pharmacy Facilities and Services in the Kingdom of Saudi Arabia; a Large Regional Analysis. *PLOS ONE*, **16**, e0247912. <https://doi.org/10.1371/journal.pone.0247912>
- [19] Ahmed Alomi, Y., Kurdy, L., Aljarad, Z., Basudan, H., Almekwar, B. and Almahmood, S. (2016) Patient Satisfaction of Pharmaceutical Care of Primary Care Centers at Ministry of Health in Saudi Arabia. *Journal of Pharmacy Practice and Community Medicine*, **2**, 79-87. <https://doi.org/10.5530/jppcm.2016.3.4>
- [20] Surur, A.S., Teni, F.S., Girmay, G., Moges, E., Tesfa, M. and Abraha, M. (2015) Satisfaction of Clients with the Services of an Outpatient Pharmacy at a University Hospital in Northwestern Ethiopia: A Cross-Sectional Study. *BMC Health Services Research*, **15**, Article No. 229. <https://doi.org/10.1186/s12913-015-0900-6>
- [21] Kamra, V., Singh, H. and Kumar De, K. (2015) Factors Affecting Patient Satisfaction: An Exploratory Study for Quality Management in the Health-Care Sector. *Total Quality Management & Business Excellence*, **27**, 1013-1027. <https://doi.org/10.1080/14783363.2015.1057488>
- [22] Nigussie, S. and Edessa, D. (2018) The Extent and Reasons for Dissatisfaction from Outpatients Provided with Pharmacy Services at Two Public Hospitals in Eastern Ethiopia. *Frontiers in Pharmacology*, **9**, Article 1132. <https://doi.org/10.3389/fphar.2018.01132>
- [23] Kebede, H., Tsehay, T., Necho, M. and Zenebe, Y. (2021) Patient Satisfaction Towards Outpatient Pharmacy Services and Associated Factors at Dessie Town Public Hospitals, South Wollo, North-East Ethiopia. *Patient Preference and Adherence*, **15**, 87-97. <https://doi.org/10.2147/ppa.s287948>

Appendix

Questionnaire

Questionnaire code: _____

Healthcare center: _____

Sociodemographic variables

Age

Sex

Masculine Feminine Other

Marital status

Married Single Divorced Widower/Widow Other

Religion

Christian Muslim African spirituality Other

Education level

Primary Secondary Graduated None Other

Profession or occupation

Public employee Private worker Self-employed None

Other

Mutauanha Napipine Muatala Namicopo

Namutequeliua Muhala Muhala-expansão

Neighborhood of residence

Muahivir Muahivir-expansão Bairro cimento

Natikiri Marrere Murrapaniua 1 Murrapaniua 2

Others: _____

How many times have you visited this pharmacy in the last five years?

1 - 4 5 - 9 10 - 14 >14

Variables to determine the satisfaction

Likert Scale

1	2	3	4	5
“Very unsatisfied”	“Unsatisfied”	“I have no opinion”	“Satisfied”	“Very satisfied”

Satisfaction with access and quality of the facilities where services are provided

Are you satisfied with the distance between the pharmacy and your neighborhood?

Are you unhappy with the distance between the pharmacy and the public transport stop?

Does the pharmacy have a parking space to park the user's car, motorbike or bicycle?

Is the pharmacy easily accessible at the health center?

Are you dissatisfied with the cleanliness of the medication waiting area?

Are you satisfied with the number of WC in the waiting/US area?

Are you dissatisfied with the cleanliness of the WC in the waiting/US area?

Do you find the medication waiting area comfortable?

Are you satisfied with the number of seats in the pharmacy waiting area?

Does the service desk make you feel comfortable discussing all your concerns?

Continued

Does the service desk allow you to hear all the explanations during the service?

Are you dissatisfied with the pharmacy's opening hours?

Satisfaction with the availability of medicines and medical items

Does the pharmacy have all the medications and medical items prescribed to patients?

Are you satisfied with the packaging of the medicines or medical items you receive?

Are the medicines and medical items dispensed by the pharmacy of poor quality?

Do you trust this pharmacy's medicines and medical items?

Is the price of medicines and medical items unfair?

Are you unhappy with the waiting time at the pharmacy to get your medicines?

Are you satisfied with the labels and the clear explanations you received about the medicines and medical items?

Satisfaction with the performance of pharmacy staff

Are you satisfied with the respect and courtesy you received from the professional?

Did the professional listen carefully to what you had to say?

Did the professional explain why the medication is taken and its importance according to the instructions?

Did the professional explain the adverse effects of the medication?

Did the professional provide additional information?

Did the professional ensure you understood the explanation?

Did you feel confident in the accuracy of the information provided by the professional?

Is there anything you want to add about your satisfaction with these services?
