

ORIGINAL ARTICLES

Customer experience at the 2nd branch of Vaccination Clinic - Hanoi Medical University in 2022 and associated factors

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ABSTRACT

Objectives: To describe overall customer experiences and identify factors associated with customer experience at the 2nd branch of the Vaccination Clinic - Hanoi Medical University in 2022.

Methods: This cross-sectional study included 250 participants from June 2022 to June 2023 using convenience sampling. Eligible participants were clients aged 18 years or older or guardians of under-18 clients with stable mental health and the ability to complete a questionnaire. Data were collected using a revised SOPEQ Toolkit questionnaire adapted to the local healthcare system. Descriptive statistics and inferential tests were applied, with $p < 0.05$ considered statistically significant.

Results: Overall, 87.6% of clients reported a positive vaccination experience. For specific aspects, over 90% of clients had positive experiences. The highest rating was for “Inside the vaccination room” (96%), followed by “Interaction with doctors” (95.2%), “Before visiting” (94.8%), and “Post-vaccination monitoring” (94.4%). The experiences related to “Arriving at the vaccination center” (93.2%) and “Environment and facilities” (90.4%) were rated positively, while “Leaving the vaccination center” had the lowest rate at 90%. Female clients were 2.47 times more likely to report a positive experience than males (OR = 2.47, 95% CI: 1.14–5.34, $p = 0.02$). Clients who traveled by car or on foot were 2.55 times more likely to have a positive experience than those using motorbikes (OR = 2.55, 95% CI: 1.08–6.02, $p = 0.03$). Other personal characteristics showed no significant association with experience.

Conclusions: Clients reported a highly positive vaccination experience, particularly in pre-visit communication and interactions with healthcare providers. These findings highlight key strengths of the clinic’s services and areas for continued improvement.

Keywords: Customer Experience, Vaccination Clinic, Satisfaction, Associated factors.

INTRODUCTION

Nowadays, in the healthcare field, people are not only patients but also consumers of healthcare services. As healthcare choices expand,

individuals increasingly evaluate service quality before making decisions (1). Smart consumers always tend to choose the best service providers for them, leading healthcare facilities to enhance their services to improve customer



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experience and ensure patient loyalty (2). Customer experience has emerged as a critical determinant in healthcare quality assessments, influencing not only patient retention but also word-of-mouth recommendations and institutional reputation (3).

Medical facilities, both public and private, are no longer solely focused on treatment but are also expanding into preventive care, including vaccination services (4). Alongside government-funded vaccination programs, private vaccination services are growing rapidly to meet the increasing demand for personalized, convenient, and efficient immunization options (5). In this competitive landscape, a positive customer experience plays a crucial role in determining whether individuals return to a facility for future vaccinations or recommend it to others (6).

The second branch of the Vaccination Clinic, operated by Institute of Preventive Medicine and Public Health - Hanoi Medical University, was officially authorized on July 21st, 2018, at 35 Le Van Thiem Street, Thanh Xuan District, Hanoi (7). With the motto: Safe-Attentive-Trustworthy, the clinic always strives to provide convenience, comfort, and peace of mind to its customers. A previous satisfaction survey conducted in 2020 reported that 73.7% of customers were satisfied with the clinic's services (8). However, there remains a lack of comprehensive assessments of customer experience in vaccination services, particularly in Vietnam. Most existing studies focus on service quality from a clinical perspective rather than evaluating customer interactions, accessibility, and overall service experience (9, 10).

Despite the increasing emphasis on patient-centered vaccination services, no prior study has systematically evaluated the entire customer experience at this clinic. Understanding customer experience is crucial for identifying strengths, addressing potential service gaps, and improving healthcare delivery. Therefore,

this study aims to describe overall customer experiences and identify factors associated with customer experience at the second branch of the Vaccination Clinic - Hanoi Medical University in 2022.

METHODS

Study Design: This was a cross-sectional study.

Research subjects: The eligibility criteria for the study were (1) clients older than 18 years old or family members of under 18-year-old clients and (2) clients with stable mental health and having the ability to answer the questionnaire. We excluded clients who refused to participate or left before using services. Convenience sampling was conducted until the needed sample size was reached. A total number of 250 clients had been interviewed for the study.

Study site and time: The study was conducted among customers in the 2nd branch of Vaccination Clinic - Hanoi Medical University from June 2022 to June 2023.

Sample size and sampling method: We apply the formula for calculating the estimated sample size for a proportion:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

In which:

n was the minimum sample size.

$Z^2_{(1-\alpha/2)}$ was the value obtained from the table corresponding to the statistical significance level $\alpha=0.05$

p was the estimated proportion of customers with positive experiences. The percentage of Vietnamese outpatient satisfied with Commune Health Center services in 2021 was 86.8%, $p=0.868$ (11)

d = 0.05 was the desired absolute precision.

After substituting the numbers into the formula, we calculate the minimum sample size required $n = 177$ participants. The study interviewed a total of 220 participants, of whom 196 provided complete responses, resulting in a response rate of 89.1%.

Study variables and qualitative research topics:

Our questionnaire, designed to assess outpatient experiences according to the Picker Institute Europe framework, was adapted from the SOPEQ Toolkit by Lai-Yi Wong et al. (2014) (12,13). The original English version, comprising 10 factors and 47 sub-categories, was translated into Vietnamese by two independent bilingual experts and then back-translated to ensure conceptual equivalence. A panel of healthcare professionals—consisting of principal investigators, lecturers, and hospital management faculty—reviewed the translated version for clarity and relevance. Following a pilot test with 30 patients from the target population to assess clarity, relevance, and response consistency, the questionnaire was refined. The final version, incorporating additional questions based on Decree 104/2016/ND-CP on vaccination activities (7) and the Hanoi Medical University's "Safe Vaccination Practice" continuous learning curriculum, included 8 factors and 42 sub-categories. Reliability analysis showed Cronbach's alpha values ranging from 0.66 to 0.97, indicating acceptable to excellent internal consistency.

Our questionnaire comprised 2 parts: Part I: General Information (13 questions) and Part II: Overall Customer Experience (8 factors, 42 sub-categories). Specifically, the factor "before arriving at the vaccination clinic" (3 questions); the factor "arrival at the vaccination clinic" (6 questions); the factor "environment and facilities of the clinic" (6 questions); the factor "interaction with doctors" (9 questions); the factor "in the vaccination room" (3 questions); the factor "post-vaccination follow-up" (3 questions); the factor "leaving the vaccination

clinic" (4 questions); and the factor "overall vaccination experience" (8 questions).

The data collection team, including 3 final-year students in Doctor of Preventive Medicine major, was trained one day before commencing the data collection procedure. During the process, all investigators wore casual clothes and did not introduce themselves as an employee of the clinic to avoid affecting overall customer feedback. Clients after finishing the vaccination will be directly interviewed at the post-vaccination observation area. All participants voluntarily participated in the study. The survey was conducted every working day (From Monday to Friday at 8-11 am and 2-5 pm) until the needed sample size was reached.

Processing and analyzing data: The data were entered and cleaned using Epidata 3.1, then analyzed by STATA 16.0. Descriptive statistics were used to describe general characteristics of study subjects, calculate the average point of positive customer experience and the percentage of positive experience for each sub-category.

The Likert-5 scale from 1 (Do not agree at all) to 5 (Totally agree) was applied to the questionnaire. According to the logical interference, a score above 4 marks a positive experience. Therefore, the Likert scale for each question can be divided into 2 groups: non-positive experience (1-3) and positive experience (4-5), from which the percentage of positive feedback for each sub-category and overall experience can be calculated.

The customer's overall experience was assessed based on 8 elements: "before arriving at the vaccination clinic", "arriving at the vaccination clinic", "overall environment and facilities", "interaction with healthcare workers", "inside the vaccination room", "post-vaccination follow-up", "leaving the vaccination clinic", "overall vaccination experience".

OR, Chi-square test and Fisher's exact test were used to analyze the association between

dependent variables (customer experience factors) and independent variables (general subject characteristics), with $p < 0.05$ considered statistically significant.

Research ethics: The research was approved by Hanoi Medical University Institutional Review Board with Decision No. 7150/QĐ-ĐHYHN and Vaccination Clinic 2nd branch - Hanoi Medical University. The interview subjects voluntarily participated in the study, with full assurance that their personal information and the information they provided would remain confidential.

RESULTS

General Characteristics of Study Participants

According to Table 1, the age of clients ranged from 18 to 79, with an average of 35.1 ± 10.29 years. Female clients accounted for 67.2%, twice that of male clients (32.8%). Regarding educational level, the majority held a university degree, followed by postgraduate degrees, vocational/college education, and high school or lower levels of education. The majority of clients were employed in private enterprises, followed

by government officers and freelancers. Other occupations were less represented, including housekeepers, retirees, students, and industrial workers. Notably, no clients were farmers. In terms of average monthly household income, nearly half of clients reported an income above 20 million VND.

In addition, the majority of clients live within 5km of the Vaccination Clinic, with only 8% of clients living more than 5 km from the center. Regarding transportation, motorcycles were the most common vehicle, followed by cars and more than 10% of participants walked to the clinic. Most clients reached the vaccination center within 30 minutes.

On average, clients used vaccination services 9.1 ± 7.14 times, with a maximum of 31 visits, in which more than one-third of clients used the service more than 10 times. Clients primarily learned about the vaccination center through family and friends, each accounting. More than 20% of clients were direct users of the vaccination service, nearly 70% accompanied children to vaccination appointments, and 10% were both direct users and child vaccination companions.

Table 1. Demographic and Socioeconomic Characteristics of Study Participants

Characteristics	n (%)
Age (years)	
Mean SD	35.1 ± 10.29
≥ 35 years old	101 (40.4)
< 35 years old	149 (59.6)
Gender	
Male	82 (32.8)
Female	168 (67.2)
Education	
High school or lower	20 (8)
Vocational/College	23 (9.2)
University	158 (63.2)
Postgraduate	49 (19.6)

Characteristics	n (%)
Occupation	
Farmer	0 (0)
Worker	6 (2.4)
Student	8 (3.2)
Government officers	60 (24)
Private enterprises	111 (44.4)
Freelancers	38 (15.2)
Housewives	15 (6)
Retirees	12 (4.8)
Monthly household income	
<10 million VND	31 (12.4)
10 - 20 million VND	78 (31.2)
20 - 30 million VND	67 (26.8)
> 30 million VND	74 (29.6)
Distance from home	
< 1 km	107 (42.8)
1 - 5 km	123 (49.2)
5 - 10 km	14 (5.6)
> 10 km	6 (2.4)
Transportations	
Car	77 (30.8)
Motorcycle	139 (55.6)
Walking	34 (13.6)
Travel time	
< 30 minutes	235 (94)
> 30 minutes	15 (6)
Service use time (times)	
Mean (SD)	9.1 (7.14)
< 5 times	86 (34.4)
5 – 10 times	80 (32)
>10 times	84 (33.6)
Information on the Vaccination Clinic	
Family	71 (28.4)
Friends	71 (28.4)
Healthcare workers	19 (7.6)
Internet	47 (18.8)
Advertising boards	42 (16.8)

Among 196 clients accompanying children to vaccination appointments, about one-third had one child and nearly half had two

children. A single child being vaccinated accounted for above 75%, while around 20% involved two or more children. Among the

vaccinated children, more than half were the eldest and second child. Additionally, nearly

20% of cases involved two children, where the eldest and second child were vaccinated.

Table 2. Demographic and Behavioral Information of Individuals Accompanying Children to Vaccination Appointments

Characteristics	n (%)
Number of children	
1	67 (34.2)
2	92 (46.9)
3 and above	37 (18.9)
Number of children went to Vaccination Clinic	
1	150 (76.5)
2 and above	46 (23.5)
Order of children in family	
1 st child	76 (38.8)
2 nd child	52 (26.5)
3 rd child	20 (10.2)
4 th child	2 (1)
1 st and 2 nd	36 (18.4)
2 nd and 3 rd	4 (2)
1 st , 2 nd and 3 rd	6 (3.1)

Overall customer experience

The overall positive vaccination experience rate among clients was 87.6%. (Figure 1) However, for specific aspects, the proportion of

clients reporting positive experiences exceeded 90%. Notably, the “Inside the vaccination room” aspect had the highest rate, followed by “Interaction with the doctors”, “Before visiting” and “Post-vaccination monitoring”.

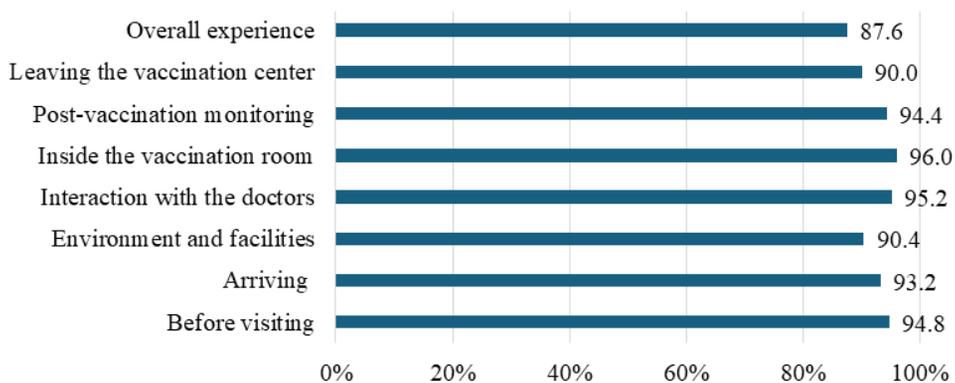


Figure 1. Proportion of Customers Reporting a Positive Experience at Different Stages of the Vaccination Process

Associated factors to customer experience of overall vaccination experience

According to the results in Table 3, female customers were more likely to have a positive experience than male ones (OR: 2.47, 95% CI: 1.14–5.34, $p = 0.02$). Additionally, customers

who traveled by car or on foot had a higher likelihood of a positive experience compared to those traveling by motorbike (OR: 2.55, 95% CI: 1.08–6.02, $p = 0.03$). Other personal characteristics were not significantly associated with the general experience.

Table 3. Factors Associated with Overall Customer Experience During Vaccination

Associated factors	cOR (95%CI)		aOR (95%CI)	p
Age (years)				
≥ 35 years old	1	0.85	1	0.85
< 35 years old	0.93 (0.43, 1.99)		1.08 (0.50-2.36)	
Gender				
Male	1	0.029	1	0.02
Female	2.5 (1.15 – 5.26)		2.47 (1.14-5.34)	
Education				
≤ Vocational/College	1	0.62	1	0.5
≥ University	0.68 (0.23 – 2.09)		0.69 (0.23-2.07)	
Monthly household income				
< 20 million VND	1	0.44	1	0.33
≥ 20 million VND	0.68 (0.31 – 1.49)		0.70 (0.31-1.49)	
Transportations				
Motorcycle	1	0.042	1	0.03
Car/Walking	2.58 (1.10 – 5.88)		2.55 (1.08-6.02)	

DISCUSSION

Understanding customer experiences with vaccination-on-demand services is vital for improving service quality. This study explored key factors influencing customer experience, including pre-visit communication, staff interactions, and the clinic environment. The findings highlight the importance of proactive support and tailored care in enhancing trust and long-term engagement with vaccination services.

Customer experience

The proportion of customers with a positive experience before visiting the vaccination

room was relatively high, reaching 94.8%. This result surpasses the findings of the Hong Kong Hospital Authority's 2014 study (14). A possible explanation for this difference is that our study was conducted in a private vaccination clinic, where appointment scheduling and customer reminders are more structured compared to public healthcare settings. At the vaccination clinic of the second facility of Hanoi Medical University, when a customer's vaccination schedule approaches, the clinic sends a reminder message one day in advance, providing details of the time, location, and schedule for the following day. Additionally, the clinic operates from Monday to Sunday morning, enabling

customers to easily arrange their schedules, thereby enhancing their pre-vaccination experience. However, a small proportion of customers reported fewer positive experiences, possibly due to not receiving reminder messages from the clinic, even though it was not their first visit. To address this issue, the clinic should closely monitor the list of scheduled customers to avoid missing notifications or errors in the messaging process, ensuring the most positive experience for all customers.

A total of 93.2% of customers had a positive experience when visiting the vaccination clinic, a result higher than the study conducted by Nguyen Thi Huyen Tram at the Hanoi Medical University Hospital (15). Regarding the environment and facilities of the vaccination room, this factor received a slightly lower satisfaction rate of 90.4% compared to other factors. However, this result remains higher than other studies, such as Mai Thi Dung's 2020 study at Dong Nai International General Hospital (62.8%) (16) or Shuying Yin's study (17). This discrepancy may stem from differences in the type of healthcare facilities. Unlike general hospitals, which handle various medical conditions and emergencies, vaccination clinics primarily serve scheduled clients, allowing for better facility management and cleanliness. At the vaccination clinic, cleaning staff frequently maintain cleanliness to ensure the best environmental quality for customers.

Regarding interaction with doctors, the rate of positive experience was 95.2%. During interviews, respondents stated that doctors at the vaccination clinic were enthusiastic, and the consultation time was sufficient for them to ask questions and receive understandable answers. This result aligns with the study by Nguyen Thi Huyen Tram at Hanoi Medical University Hospital (93.4%) (15). Positive customer experiences also play a crucial role in motivating healthcare staff, fostering

professional development and continuous service improvement.

The factor with the highest positive experience rate was "in the vaccination room," at 96%. Specifically, 96.4% of respondents reported that healthcare staff offered reassurance and support when they were anxious about their condition. Staff also assisted customers facing difficulties, such as soothing crying children or helping parents who struggled to comfort their children. First-time visitors with limited knowledge of childcare or vaccination procedures were provided detailed guidance, fostering a sense of closeness and trust between customers and staff, ensuring peace of mind when using the service.

A total of 94.4% of respondents reported a positive experience with the "post-vaccination monitoring" factor. This aligns with Le Thi Huong's study on post-vaccination monitoring rates (96.4%) (18). Given that Hanoi reported 50 post-vaccination reactions between 2013 and 2017 (19), ensuring effective monitoring is essential in minimizing risks and improving overall service trust.

Approximately 90% of respondents had a positive experience with the "leaving the vaccination room" factor. Customers were reminded about their next dose and provided contact information for any issues after leaving the clinic. Knowing whom to contact in case of adverse post-vaccination reactions reassures customers about the service. However, this factor's satisfaction rate was lower than other aspects, such as "before the visit," "interaction with doctors," or "in the vaccination room." The vaccination service experience encompasses the entire customer journey, from entering the clinic to leaving. Therefore, the clinic should focus more on post-service aspects to provide the best experience (15).

The "overall vaccination experience" factor had the lowest positive experience rate at 87.6%. This result is similar to studies in Hong Kong

(14). During interviews, respondents noted that healthcare staff wore name tags, making it easy to identify them without introductions. However, some first-time customers expressed a desire for more personalized attention and a complete service experience. Simple yet meaningful gestures, such as personalized greetings from staff, can enhance customer comfort and foster stronger connections with the clinic. Introducing themselves helps staff build trust and foster a welcoming atmosphere with customers, encouraging long-term service use at the vaccination clinic.

Associated factors

The study highlights a correlation between gender and the overall vaccination experience. In Vietnamese culture, women traditionally play a significant role in caring for the family and children (20). As primary caregivers, they are often more familiar with the vaccination process, contributing to higher comfort levels and overall satisfaction. The presence of mothers is almost indispensable when taking children for vaccination, which explains why women tend to have more frequent and positive experiences compared to men.

Additionally, customers who traveled by car or on foot reported higher positive experience rates than those who traveled by motorbike, with this difference being statistically significant. While no previous studies have specifically addressed the relationship between mode of transportation and positive experiences, it can be inferred that walking customers often live within a short distance of the vaccination clinic (under 1 km). This finding aligns with Nguyen Quang Minh's 2017 study, which showed that shorter distances were associated with higher satisfaction levels (21).

For customers traveling by car, whether using personal vehicles or taxis, the comfort of transportation shields them from environmental factors like wind and dust, especially during

cold weather. The convenience and comfort associated with private vehicles may positively influence customers' perceptions of the entire vaccination experience, making them more likely to report higher satisfaction (22).

Strength and limitation

The study has notable strengths that underscore its contribution to the field. It sheds light on a relatively unexplored area - customer experiences with vaccination-on-demand services - offering practical insights into factors influencing satisfaction, such as transportation methods, gender roles, and service logistics.

However, several limitations should be acknowledged. First, the study was conducted at a single vaccination clinic using a convenience sampling approach, which limits the generalizability of the findings. The results may not be fully representative of the broader population of vaccination clients, making it difficult to extrapolate these findings to other vaccination clinics with different operational models, geographical locations, or patient demographics. Future studies should consider a multi-site design with a more diverse sample to enhance external validity.

Second, the reliance on self-reported data introduces potential biases, particularly recall bias and social desirability bias. Clients may not accurately remember or assess their vaccination experience, especially if there was a delay between their visit and survey participation. Additionally, some participants may have provided more positive responses due to face-to-face interviews with researchers. To mitigate these issues, future research could incorporate real-time data collection or anonymous surveys to improve response accuracy.

Third, the scarcity of comparative data on customer experiences with vaccination-on-demand services limited the depth of discussion. Most available studies focus on patient experiences in broader healthcare settings rather

than specialized vaccination services, making direct comparisons challenging. Expanding research in this area would provide a stronger basis for benchmarking customer satisfaction in different vaccination service models.

Finally, the survey tool was adapted from an outpatient experience framework and the "Vaccination Safety Practices" curriculum, which, while comprehensive, may not fully capture the unique nuances of customer experiences in vaccination settings. The lack of a fully tailored measurement tool might have influenced the scope of the findings. Future studies should consider developing and validating a more specialized instrument to assess customer experiences with vaccination services more accurately.

CONCLUSION

In conclusion, this study provides valuable insights into customer experiences with vaccination-on-demand services, highlighting areas of satisfaction and opportunities for improvement. Positive experiences were particularly associated with pre-visit communications, interactions with healthcare staff, and support during the vaccination process, reflecting high levels of service quality. However, some areas, such as post-service interactions and overall vaccination experience, revealed room for enhancement.

To address this, vaccination clinics should implement structured post-vaccination follow-ups, such as automated reminder messages for subsequent doses, post-visit check-ins to assess adverse reactions, and clearer communication of contact points for post-vaccination concerns. Additionally, staff training programs should emphasize patient engagement techniques to foster a more personalized experience, particularly for first-time visitors. The study also identified significant factors influencing customer

experience, including gender roles and modes of transportation, suggesting the need for tailored service adjustments to accommodate diverse customer needs. Despite limitations in scope and representativeness, this research contributes to understanding customer experiences in vaccination services and offers a foundation for future studies to develop targeted interventions for improving service quality and customer satisfaction.

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