



Original article

Mothers' Knowledge, Attitudes, and Practices Regarding the Expanded Programme on Immunization in the Konobougou Health Area

Connaissances, attitudes et pratiques des mères sur le Programme élargi de vaccination dans l'aire de santé de Konobougou

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Résumé

Introduction : La vaccination est l'une des interventions les plus efficaces et les moins coûteuses de prévention des maladies infectieuses. Cette étude visait à évaluer les connaissances, attitudes et pratiques des mères concernant le Programme élargi de vaccination (PEV). **Matériels et méthodes :** Une étude transversale descriptive a été menée de février à mai 2022 auprès de 219 mères d'enfants âgés de 0 à 23 mois résidant dans l'aire de santé de Konobougou. L'enquête communautaire a utilisé un questionnaire administré en face à face. Les données ont été analysées avec SPSS 22. **Résultats :** Parmi les participantes, 64,4 % n'étaient pas scolarisées. Toutes avaient entendu parler du programme de vaccination, mais 72,6 % décrivaient mal le calendrier vaccinal. Selon les mères, 95,9 % des enfants étaient à jour de leurs vaccinations. Les manifestations adverses post-immunisation (MAPI) n'étaient pas connues par 74,9 % des mères et 81,3 % ne connaissaient pas la conduite appropriée à tenir. **Conclusion :** Les mères reconnaissaient l'importance du PEV et faisaient

vacciner leurs enfants, mais leur connaissance du calendrier, des maladies cibles et des MAPI demeurait insuffisante. Une communication éducative adaptée au faible niveau d'instruction est nécessaire.

Mots-clés : connaissances ; attitudes ; pratiques ; mères ; vaccination.

Abstract

Introduction: Immunization is among the most effective and least costly interventions for preventing infectious diseases. This study assessed mothers' knowledge, attitudes, and practices regarding the Expanded Programme on Immunization (EPI). **Materials and methods:** A descriptive cross-sectional study was conducted from February to May 2022 among 219 mothers of children aged 0–23 months who lived in the Konobougou health area. A community household survey used a face-to-face questionnaire. Data were analyzed with SPSS 22. **Results:** Overall, 64.4% of participants had no formal schooling. All had heard of the immunization program, but 72.6% described the schedule incorrectly. According to maternal report,

95.9% of children were up to date with immunization. Adverse events following immunization (AEFIs) were unknown to 74.9% of mothers, and 81.3% did not know the appropriate response to an AEFI. Conclusion: Mothers recognized the importance of EPI and had their children vaccinated, but knowledge of the schedule, target diseases, and AEFIs remained inadequate. Educational communication adapted to low literacy levels is needed.

Keywords: knowledge; attitudes; practices; mothers; immunization.

Introduction

Vaccination consists of administering an antigenic preparation derived from, or related to, a specific infectious agent to induce an immune response capable of protecting against disease caused by that agent. Vaccination can control or eliminate contagious infections and is an essential public health tool [1]. Its purpose is to enable individuals to develop active, specific protection against infectious agents [2].

Vaccination is one of the most cost-effective primary prevention interventions and one of humanity's major public health achievements because it reduces morbidity and mortality from infectious diseases and the need for healthcare contact [3–7]. It remains among the most effective and least costly methods for controlling infectious disease at population level [8,9]. Historical estimates cited in the literature indicate that vaccination prevents approximately 2.5 million deaths annually. When the EPI was launched in 1974, however, fewer than 5% of children in developing countries had received a third dose of diphtheria–pertussis–tetanus and poliomyelitis vaccines [10]. The EPI schedule aims to optimize protection against target diseases through vaccines administered during early childhood [11].

Immunization programs have produced major reductions in many infectious diseases [12]. In 1974, the World Health Organization launched the EPI against six initial target diseases: diphtheria, tetanus,

pertussis, poliomyelitis, measles, and tuberculosis [13]. Mali launched its EPI in 1986 with support from development partners. After initial implementation in Kolokani, Barouéli, and Douentza, the program expanded progressively throughout the country. The first community health centers were created in 1994, together with outreach strategies for villages located 5–15 km from a health facility. Target populations initially included children aged 0–23 months, later focused on those aged 0–11 months, as well as pregnant women [14].

Maternal knowledge may significantly influence childhood vaccination status and predict completion of the immunization schedule [15,16]. Limited access to information contributes to under-immunization [17–19], and maternal occupation may further restrict the time available for vaccination visits [20]. Parental engagement is therefore central to EPI performance [21].

The Konobougou health center conducts four fixed-site and nine outreach vaccination sessions each month. An internal supervision exercise in 2021 found that some mothers started vaccination late or missed scheduled antigen-administration visits. Because mothers are usually the principal caregivers responsible for childhood vaccination, we considered it important to assess their knowledge, attitudes, and practices regarding immunization.

Methodology

The study was conducted in the Konobougou Community and University Health Center, Barouéli Health District, Ségou Region. It was a descriptive cross-sectional study carried out over four months, from 1 February to 31 May 2022. Eligible participants were mothers of children aged 0–23 months who lived in the Konobougou health area and agreed to participate. Mothers who did not consent or did not live in the health area were excluded.

Households were selected using a systematic community sampling procedure. In each village, the first direction was chosen by spinning a pen at the

village center. Investigators then visited every third household along the selected lane, moving to the next eligible household when a dwelling was unoccupied. Recruitment continued until the calculated sample size of 219 mothers, based on the Daniel Schwartz formula, was reached.

Trained investigators administered a structured questionnaire face to face in participants' homes. Data were entered, processed, and analyzed using SPSS version 22. Pearson's chi-square test was used, with statistical significance set at $p < 0.05$.

Results

A total of 219 mothers were surveyed. The most represented age group was 20–25 years (46.6%). Most participants were homemakers (95.4%), 64.4% had no formal schooling, and all were married. Approximately 78.5% lived in surrounding villages, and women with two or three previous births were the largest parity group (37.9%).

All mothers had heard of the immunization program, and 94.5% knew the vaccination day. However, 72.6% described the immunization schedule incorrectly (Table II).

Knowledge of EPI target diseases was limited: 65.8% of mothers could name fewer than three target diseases, and 12.8% could name none (Table III).

All mothers recognized the importance of vaccination, and 99.1% knew that vaccines were provided free of charge. Nevertheless, 74.9% had no knowledge of AEFIs (Table IV), and 81.3% did not know the appropriate action to take if an AEFI occurred. According to maternal report, 95.9% of children were up to date with immunization.

Mothers aged 30–35 years and ≥ 36 years tended to describe the immunization schedule more accurately than younger mothers, but the association did not reach statistical significance ($p = 0.070$). Mothers aged 20–25 years had poorer knowledge of EPI target diseases than other age groups ($p = 0.013$).

Table I. Sociodemographic characteristics of participating mothers

Characteristic	Category	Number	Percentage (%)
Age	16–19 years	28	12.8
	20–25 years	102	46.6
	26–29 years	37	16.9
	30–35 years	32	14.6
	≥ 36 years	20	9.1
Occupation	Homemaker	209	95.4
	Unemployed	5	2.3
	Merchant	2	0.9
	Other	3	1.4
Education	No formal schooling	141	64.4
	Primary	33	15.1
	Secondary	23	10.5
	Quranic school	22	10.0
Marital status	Married	219	100
	Not married	0	0

Table II. Mothers' knowledge of the immunization schedule

Description of the schedule	Number	Percentage (%)
No description	8	3.7
Correctly described	52	23.7
Incorrectly described	159	72.6
Total	219	100

Table III. Mothers' knowledge of EPI target diseases

Number of target diseases identified	Number	Percentage (%)
None	28	12.8
Fewer than 3	144	65.8
3–5	45	20.5
More than 5	2	0.9
Total	219	100

Table IV. Mothers' knowledge of adverse events following immunization

Knowledge of AEFIs	Number	Percentage (%)
Yes	55	25.1
No	164	74.9
Total	219	100

Discussion

Almost all participating mothers were homemakers. This finding was similar to that of Coulibaly et al., who reported proportions of 95.4% and 99.3% in a 2020 study at the Konobougou Community and University Health Center [22].

More than half of participants had no formal schooling, probably reflecting limited educational opportunities for girls in the study area. Dembélé et al. found that 50% of mothers had no formal schooling in 2019 [23], whereas 33.3% had attended school in the study

by Coulibaly et al. [22]. Drabo reported that 86% of participants had not attended school [24].

More than two-thirds of participants lived in surrounding villages, which is consistent with the fact that the Konobougou health area includes 21 villages. Dembélé et al. reported that 56.52% of respondents lived in Konobougou town [23]. This difference is probably explained by sampling: our study included all villages, whereas their data were collected within the Konobougou health center.

Women with low parity were the largest group, reflecting their distribution in the community.

All participants were married, consistent with the importance placed on marriage in the local community. High proportions of married participants were also reported by Nadjib et al. (81.4%) [21], Coulibaly et al. (99.3%) [22], and Lalaina (88.57%) [25].

All mothers had heard of the immunization program. This may reflect awareness activities conducted by community health workers, women's health-service committees, and technical staff. Lalaina reported good vaccination knowledge in 43.45% of mothers [25], whereas Nguefack et al. found very good knowledge among most participants [20].

Most mothers knew the vaccination day, probably because fixed-site sessions were held every Thursday and outreach schedules were communicated to villages. However, approximately three-quarters could not correctly describe the schedule, and two-thirds could name fewer than three EPI target diseases. These gaps may result from insufficient educational discussion during vaccination sessions and incomplete functionality of the community health-worker network. Dembélé et al. similarly found that 65% of mothers initially had no knowledge of diseases targeted by the third pentavalent dose [23]. By contrast, at least 80.4% of mothers could identify one EPI target disease in the study by Nguefack et al. [20], and 71.4% accurately explained the schedule in Drabo's study [24].

Most mothers did not know what to do when an AEFI occurred. Inadequate knowledge of appropriate responses may contribute to missed appointments or withdrawal from the program. Conversely, almost all mothers reported keeping their children's immunization appointments, supporting high schedule completion. Lalaina likewise reported that more than 90% of mothers had fully immunized their children and remembered the vaccination date [25].

Conclusion

The EPI substantially reduces childhood morbidity and mortality. Effective use of immunization services depends in part on maternal knowledge because

mothers most often bring children for vaccination. Participants were predominantly married homemakers with no formal schooling. They had heard of EPI, knew vaccination days, recognized the importance of vaccination, and reported high uptake among their children.

Important gaps remained in knowledge of the immunization schedule, target diseases, AEFIs, and the appropriate response to an AEFI. Health services should organize focused educational sessions on these topics and use illustrated communication tools adapted to low literacy levels.

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Conflict of interest : None

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