Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Epidemiology

Under-Attendance at Preventive Surveillance Services for Children Aged 12 to 59 Months: The Case of Commune IV of Bamako, Mali

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DOI: https://doi.org/10.36347/sjmcr.2025.v13i12.020 | **Received:** 05.10.2025 | **Accepted:** 08.12.2025 | **Published:** 18.12.2025

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Abstract **Original Research Article**

Under-attendance of health services prevents children from being monitored continuously for the first five years. Our purpose was to study the socio-demographic and cultural factors associated with under-attendance of preventive services for children aged 12 to 59 months. A cross-sectional cluster survey of 180 mothers of children was conducted between May and July 2019 in commune IV of Bamako. The information was collected during the individual interview. The Pearson chi-square test or Fisher exact was used with a significance level p <0.05. The free, verbal informed consent and confidentiality of the data have been respected. Among the factors; the lack of knowledge of the existence of the preventive services of the children from 12 to 59 months (p = 0.001, OR = 4.70 IC95% [1.29 - 17.10]), the non-knowledge of the moment of stoppage of the Preventive Surveillance Service (PSS) at 5 years (p = 0.009, OR = 5.75 95% CI [1.71 - 19.29]) and no knowledge of preventive service activities (p = 0.008, OR = 3.80 95% CI [1, 33 - 10.84]), only the first two remained significant after multiple logistic regression. In our study, the prevalence of under-attendance of preventive services of children aged 12 to 59 months in commune IV of Bamako was high. This under-attendance was statistically associated with the lack of awareness of the 5-year downtime and the lack of awareness of the preventive service activities. This implies a lack of communication between mothers of children aged 12 to 59 months and health workers.

Keywords: mothers, factors, under-attendance, preventive surveillance, commune IV, Bamako.

INTRODUCTION

Surveillance is an activity that involves maintaining continuous information about a given epidemiological situation so that rapid action can be taken in the event of a sudden increase in risk [1].

Preventive surveillance of healthy children (PSS), or growth monitoring, promotes child health, prevents disease through routine vaccination and education, detects and treats disease early, and guides parents to foster the child's intellectual and emotional development [2].

Some infant deaths could have been prevented if child growth had been regularly monitored from an early age, as weight is a sensitive indicator of small changes in child nutrition and health [3].

Unfortunately, coverage of preventive health visits for children in developing countries remains low [4], especially in countries where social and cultural barriers exist [5].

Mali, a developing country, has been experiencing a political and security crisis that has seriously affected the health system since 2012. Since 2016, with the support of partners, the capacities of health centers in Mali have been strengthened to use the new World Health Organization (WHO) growth charts for child growth monitoring.

In 2018, the under-attendance rate for preventive health surveillance services for children aged 12 to 59 months was 95.1% nationally [6]. This lack of attendance at preventive services for children aged 12 to 59 months is fairly common across all health centers in Mali, and the district of Bamako, the capital of Mali, had an under-attendance rate of 98.4%, higher than the national rate which is 95.1% in 2018 [6], hence its choice.

Thus, and based on this observation and in order to bring new knowledge to the science and to find solutions to this public health problem, we decided to study the sociodemographic and cultural factors associated with the under-attendance of PSS by mothers of children aged 12 to 59 months.

METHOD

This was a cross-sectional, two-stage cluster random sample study conducted between May and July 2019 in Bamako's Commune IV. The study population consisted of mothers of children aged 12 to 59 months in Commune IV. All mothers of children aged 12 to 59 months in Commune IV who agreed to participate in the study were included. Mothers of children absent from their household at the time of the survey, or those who refused, were excluded.

The minimum sample size of 157 mothers was determined using the Daniel Schwartz formula. This size was increased to 180 to prevent possible non-response, and information was collected during individual, face-to-face, semi-structured interviews. To study the socio-cultural factors associated with under-attendance of preventive surveillance services, our variables focused on the sex and age of the child and information on the mother which was the age, education level, occupation, awareness of the existence of services, awareness of when attendance began, awareness of when attendance stopped, awareness of activities, awareness of the benefits of attendance, and use of traditional practitioners.

SPSS 25.0 software was used for univariate, bivariate, and multivariate statistical analyses. Pearson's chi-square test was used, or Fisher's exact test if the theoretical sample size was less than 5. The significance threshold of $p < 0.05$ was used.

For the multivariate analysis, we used multiple logistic regression, which allowed us to test several explanatory variables to determine the factors that could contribute to under-attendance of PSS.

The variables included in the model were those with a p-value less than 0.05. No forced variables, i.e., those with a p-value less than 0.05 but which, according to the literature, are a factor associated with under-attendance at PES services, were used in the model.

Consent from the political and health authorities of Commune IV was obtained before individual verbal consent was obtained from mothers of children aged 12 to 59 months at the time of the survey.

RESULTS

The study on under-attendance at preventive surveillance services for children involved a total of 180 mothers of children aged 12 to 59 months in

Commune IV of Bamako yielded the following results:

Regarding sociodemographic factors, the ages of mothers of children aged 12 to 59 months surveyed ranged from 18 to 42 years. The average age was 28.78 years [27.92 – 29.64]. The majority of mothers had a primary education level (35.60%), followed by those who had never studied (26.70%). More than half (51.70%) were from the informal sector (Table I).

None of these sociodemographic factors was statistically associated with under-attendance of PSS for children aged 12 to 59 months in the bivariate analysis.

Regarding mothers' knowledge in the bivariate analysis:

Lack of awareness of the existence of preventive surveillance by mothers of children aged 12 to 59 months ($p = 0.001$, OR = 4.70 95% CI [1.29 – 17.10]), lack of awareness of the activities of the PSS ($p = 0.008$, OR = 3.80 95% CI [1.33 – 10.84]) and lack of awareness of the time to stop PSS at 5 years ($p = 0.009$, OR = 5.75 95% CI [1.71 – 19.29]) were statistically associated with under-attendance of preventive surveillance services for healthy children.

However, lack of awareness of the time to start PSS attendance at birth ($p = 0.68$, OR = 0.81 95% CI [0.17 – 3.89]), lack of awareness of the benefits of maternal attendance at PSS ($p = 0.09$, OR = 2.63 95% CI [0.89 – 7.70]) and the mother's use of traditional practitioners with the child ($p = 0.90$, OR = 1.10 95% CI [1.05 – 1.15]) were not statistically related to under-attendance at preventive surveillance services for healthy children from 12 to 59 months (Table II).

From the final statistical regression model, maternal unawareness of PSS activities and maternal unawareness of the time to stop attending PSS at 59 months remained statistically significant in the stepwise regression after adjustment for the variable maternal unawareness of the existence of PSS. The p values were 0.009 and 0.02, respectively.

Table I: Distribution of children aged 12 to 59 months and their mothers according to socio-demographic characteristics in Commune IV of Bamako in 2019

Sociodemographic factors		Number (n=180)	Percentage
Children's age range (months)	12 to 23 months	75	41,7
	24 to 59 months	105	58,3

Mothers' age group (years)	15 to 29 years old	102	56,7
	30 years and over	78	43,3
Gender of children	Male	84	46,7
	Female	96	53,3
Mother's education level	Never studied	48	26,7
	Primary studies	64	35,6
	Never completed high school	38	21,1
	Graduates	26	14,4
	Licensees	4	2,2
Mother's profession	Student	10	5,6
	Housewife	60	33,3
	Informal sector	93	51,7
	Public sector	17	9,4

Table II: Relationship between under-attendance of PSS and sociodemographic and cultural factors of mothers of children aged 12 to 59 months in commune IV of Bamako in 2019

Sociodemographic factors		**PSS attendance**		**OR**	**IC à 95%**	**p-Value**
		No (%)	**Yes (%)**			
Child age class (n=180)	12 to 23 months (n1=75)	85,3	14,7	0,35	[0,12-1,00]	0,043
	24 to 59 months (n2=105)	94,3	5,7			
Gender of the child (n=180)	Male (n1=84)	91,7	8,3	1,27	[0,46-3,52]	0,63
	Female (n2=96)	89,6	10,4			
Age class Mother (n=180)	15 to 29 years old (n1=102)	88,2	11,8	0,51	[0,17-1,5]	0,22
	30 years and over (n2=78)	93,6	6,4			
Mother's secondary education (n=180)	Yes (n1=30)	83,3	16,7	0,43	[0,14-1,34]	0,16
	No (n2=150)	92	8			

Table III: Relationship between under-attendance of PSS and knowledge of mothers of children aged 12 to 59 months in commune IV of Bamako in 2019

Knowledge of mothers of children	**PSS attendance**		**OR**	**IC à 95%**	**p- Value**
	No (%)	**Yes (%)**			
Knowledge of the existence of PSS services			4,70	[1,29-17,10]	0,01
No (n1=166)	92,2	7,8			
Yes (n2=14)	71,4	28,6			
Knowledge of the time of onset of PSS at birth			0,81	[0,17-3,89]	0,68
No (n1=18)	88,9	11,1			
Yes (n2=162)	90,7	9,3			
Knowledge of the activities carried out during the PSS			3,80	[1,33-10,84]	0,008
No (n1=116)	94,8	5,2			
Yes (n2=64)	82,8	17,2			
Knowledge of the time of stopping PSS at 5 years			5,75	[1,71-19,29]	0,009
No (n1=164)	92,7	7,3			
Yes (n2=16)	68,8	31,2			
Knowledge of the benefits of PSS			2,63	[0,89-7,70]	0,09
No (n1=146)	92,5	7,5			
Yes (n2=34)	82,4	17,6			

DISCUSSION

In our study, in Bamako's Commune IV, the under-attendance rate for children aged 12 to 59 months in preventive care services was 90.60%. This rate is lower than that of the 2018 statistical yearbook for all of Mali, which was 95%, and that of the Bamako district, which was 98.4% [7], which could be explained by an improvement over the previous year.

However, this prevalence of under-attendance of preventive care services for children aged 12 to 59 months is higher than that of other urban studies conducted by Gyampoh *et al.,* in Ghana in 2014 (46.2%) [8] and by Feleke *et al.,* in Ethiopia in 2017 (83.1%) [9]. These differences could be due to the choice of children's targets; our study only concerned the attendance of children from 12 to 59 months and also to the study design.

Lack of awareness of the existence of preventive surveillance by mothers of children from 12 to 59 months (p=0.01; OR=4.70 95% CI [1.29-17.10]),

lack of awareness of the time to stop PSS at 5 years (p=0.009; OR=5.75 95% CI [1.71-19.29]) and lack of awareness of PSS activities (p=0.008; OR=3.80 95% CI [1.33-10.84]) were statistically associated with under-attendance of preventive surveillance services for children.

That is, mothers of children aged 12 to 59 months who do not know about the existence of preventive surveillance services or who do not know when to stop attending or who do not know the activities carried out during a PSS session, in 4.70 or 5.75 or 3.80 times more cases respectively do not attend preventive surveillance services than those who have this knowledge.

The percentage of mothers in our study who were unaware of PSS after immunization services was comparable to that of the study conducted in Ethiopia by Feleke FW *et al.,* in 2017, which showed that 80.9% of mothers of children were unaware of the growth monitoring and promotion chart [9].

This would suggest that health professionals prioritize measurements and identifying children's nutritional status over discussions with mothers and communities, as shown in the study by Mayhew et al. conducted in Afghanistan in 2014 [10].

CONCLUSION

The results of our study showed a high prevalence of under-attendance at preventive services for children aged 12 to 59 months in Bamako's Commune IV. The factors statistically associated with this under-attendance rate in our study were related to maternal knowledge, particularly a lack of awareness of when to stop attending childcare services at age 5 and a lack of awareness of childcare activities. This suggests poor communication between mothers of children aged 12 to 59 months and health workers.

We therefore recommend that health officials enforce the division of tasks among health workers to improve communication with mothers of children aged 12 to 59 months.

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