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RESEARCH ARTICLE

Behaviors of Yahisuli's Parents in Early Childhood Immunization in 2018

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Abstract:

This descriptive cross-sectional study aims to determine the behavior of Yahisuli's parents in early childhood immunization in 2018. To collect data, we used a questionnaire administered to a non-probability convenience sample of 96 Yahisuli parents caring for a child aged 0 to 11 months. Descriptive analysis allowed us to compare our results with previous work. We recorded an average age of 32.8 years and a male/female sex ratio of 1.3. More than 95% of the parents attended school, of which 58.5% had a high school education. The birth rank of the last child is between 3 and 5 with a sex ratio of 1.3 in favor of males. Nearly 15% of children have not been fully vaccinated. In this work, 55 out of 96 parents bring their children to a health facility to be vaccinated to ensure their protection (76.4%) and prevention against infectious diseases (47.3%). On the other hand, 42% do not adhere to vaccination because of ignorance, fear due to children's incessant crying after vaccination, adverse post-immunization events. When it came to vaccines, several misunderstandings were raised. These corroborate rumors observed under other skies. Thus, a descriptive and analytical study on the epidemiological surveillance of adverse effects of vaccines is indispensable in the province of Tshopo.

Keywords: Behavior, Vaccine, Vaccination, Childhood, Tshopo.

Introduction

In the past, vaccines have elicited reactions from the population, linked to the political context of their administration, or to characteristics that are at odds with traditions, sometimes also to intrinsic manufacturing defects.

The changing natural history of infectious diseases and the resurgence of diseases that have almost disappeared make vaccination a central issue in general medicine. Numerous quantitative and qualitative studies have identified determinants of the parents' vaccination decision without providing an in-depth understanding of the motivation for the decision [1].

In the tropics, strengthened by the success of vaccines in reducing infectious diseases worldwide [2], public health organizations would like to complete the elimination of major cosmopolitan diseases (tuberculosis, poliomyelitis, measles), as well as to extend the benefits of vaccination to diseases specific to the geographical area, including parasitosis embedded in particular biotopes [1,3].

However, apart from the challenges to be met by biomedicine, the expectations and vision of the populations concerned must also be taken into consideration. This is not only a legitimate effort, from a human rights perspective, to improve information and foster citizen autonomy, along a path that is developing before our eyes.

Fifty years after the end of colonization, certain reactions of populations in tropical areas reflect a crisis of confidence in vaccination programs driven from above and from outside. The consolidation and even improvement of the results achieved with vaccines and the extension of vaccination coverage to new diseases require a historical, sociological and anthropological reflection on the implementation of programs.

In several countries, the vaccine had entered into competition with an old method using smallpox directly to obtain immunity. In general, the proponents of the vaccine then opposed the modern vaccine par excellence to the archaic, random and dangerous variolization. In Algeria, doctors perceived that resistance to vaccinia was mainly rooted in opposition to the foreign invader. In India, for a long time the English did not hurry to upset the traditional variolization sponsored by the Brahmins. Hindus were resistant to collecting vaccine lymph from the sides of the sacred cow, and shunned operations conducted by vaccinators recruited from the lower castes [1].

The Indian example of variolization, carefully analyzed by historians, highlights that vaccination is never a neutral and anonymous routine operation, immune from suspicion in the community, except perhaps in the case of epidemic-related panic. The rest of the time, the population asks itself questions that are only apparently simple: who vaccinates whom, when, how and why?

Answering these questions is crucial to avoid vaccine resistance, or in modern terms, to predict its acceptability [3]. Even poorly educated populations are quite capable of making relevant clinical observations [4].

Today, one is never completely immune to a break in the cold chain, the spread of altered or defective products, and the sporadic occurrence of measles or polio in vaccinated children.

In DR Congo, despite progress in reducing under-five mortality from 158 deaths per 1,000 live births in 2007 to 104 in 2013, the situation remains worrisome in terms of the global situation and the achievement of sustainable development goals by 2030. This excess mortality is largely due to vaccine-preventable causes. Indeed, the estimated vaccination coverage in 2013 for all

antigens was low: only 41% of children aged 12 to 23 months were fully vaccinated [5].

In the province of Tshopo, we observed cases of resistance during mass campaigns, particularly in the health zone of Yalimbongo, Opienge, Bafwasende and Yaleko. In these areas, communities such as the Kitawalists, Idomites, Catholic bongola motema, Nzambé Lumumba are very hostile to vaccination. In fact, during the 2017 supplementary immunization activities, OPV, a live attenuated vaccine, was administered to a child under five years of age in the Yaleko health zone, resulting in acute flaccid paralysis.

Although the health zone of Yahisuli is not spared from cases of resistance and/or refusal of vaccination based on certain suspicions when it comes to vaccines, we have observed that no study on the parents' behavior towards vaccination has been carried out.

It is in this context that we initiated this study to determine the behavior of Yahisuli's parents in the early childhood vaccination in 2018. Specifically, we wanted to describe the characteristics of the parents surveyed, identify the reasons for adherence and dropping out of vaccination as well as their judgments about misunderstandings around the vaccine.

Methodology

This descriptive cross-sectional study took place in the Yahisuli health zone in the province of Tshopo. This zone is mainly occupied by the Topoke, Lokele and Mbole tribes. Our population is composed of parents who are in charge of a child aged 0 to 11 months. Due to the lack of a reliable sampling list, we used a non-probability convenience sampling of 96 subjects, using a self-administered questionnaire for data collection. Descriptive analysis based on headcount tables, percentage calculations and arithmetic mean allowed us to compare our results with previous work. Parental consent, confidentiality and anonymity were respected.

Presentation of results

Characteristics of surveyed parents

Age

Table I : Age distribution of parents surveyed at Yahisuli in 2018

Age	Staff	%
52 – 58	9	9,4
45 – 51	7	7,3
38 – 44	16	16,7
31 – 37	17	17,7
24 – 30	21	21,8
17 – 23	26	27,1
Total	96	100

Parents aged 17 to 23 followed by those aged 24 to 30 are dominant. The average age is 32.8 years.

Gender

Table II: Gender distribution of parents surveyed at Yahisuli in 2018

Gender	Staff	%
Man	54	56,3
Woman	42	43,7
Total	96	100

Sex ratio male/female =1.3.

Level of education

Table III: Distribution of parents surveyed at Yahisuli in 2018 by Education Level

Level of education	Staff	%
Primary	17	18,1
Secondary	55	58,5
Superior	22	23,4
Total	94	100

58.5% of the subjects have a secondary school education compared to 23.4% with a higher education level.

Marital status

Table IV: Distribution of surveyed parents in Yahisuli in 2018 by marital status

Marital status	Staff	%
Married	90	93,7
Single	6	6,3
Total	96	100

Our respondents are represented at 93.7% of the bride and groom.

Activities carried out

Table V: Distribution by occupation of parents surveyed at Yahisuli in 2018

Occupation	Staff	%
Cultivator	20	20,8
Housewife	29	30,2
Débrouillard	7	7,3
State agent	40	41,7
Total	96	100

The majority of our respondents were government employees (41.7%), followed by housewives (30.2%) and farmers (20.8%).

Religion

Table VI: Distribution of parents surveyed in Yahisuli in 2018 by religion

Religion	Staff	%
Christian	89	92,7
Kimbanguist	6	6,3
Kitawala	1	1,0
Total	96	100

More than 90% of our respondents belong to Christianity.

Household size

Table VII: Distribution by household size of parents surveyed in Yahisuli in 2018

Household size	Staff	%
14 – 16	14	14,5
11 – 13	9	9,4
8 – 10	30	31,3
5 – 7	26	27,1
2 – 4	17	17,7
Total	96	100

The household size of the majority of our respondents is between 8 and 10 people (31.3%) or an average of 8 people per household.

Gender of the last child in the family

Table VIII: Distribution of parents surveyed in Yahisuli in 2018 by the sex of their last child born alive

Sex of last child	Staff	%
Male	55	57,3
Female	41	42,7
Total	96	100

The last child born living in 57.3% of the households surveyed was male. The male/female sex ratio was 1.3.

Child's birth rank

Table IX: Distribution of surveyed parents in Yahisuli in 2018 by birth rank of last child

Rank of birth of last child	Staff	%
15 – 17	3	3,1
12 – 14	3	3,1
9 – 11	4	4,2
6 – 8	26	27,1
3 – 5	38	39,6
0 – 2	22	22,9
Total	96	100

The birth rank of the last child of the parents surveyed ranged from 3 to 5 (39.6%). The average birth rank is 5.

Geographic accessibility

Table X: Distribution of Subjects by distance to travel to a health facility in Yahisuli in 2018

Distance to go in Km	Staff	%
≥5	16	16,6
2-4	28	29,2
≤ 1	52	54,2
Total	96	100

More than 50% of the parents surveyed are within one kilometer of a health facility.

Parents' behaviour towards vaccination

Vaccination adherence

Table XI: Opinion of Yahisuli's parents in 2018 on reasons for adhering to vaccination (n=57)

Reason for adherence to vaccination	Staff	%
Prevention	26	47,3
Protection	42	76,4
Don't know	6	10,9

Protection (76.4%) and prevention (47.3%) are the main reasons for adherence to vaccination according to the parents surveyed.

Reason for dropping out of vaccination

Table XII: Opinion of Yahisuli's parents in 2018 on reasons for dropping out of vaccination (n=41)

Reason for dropping out	Staff	%
The disease	24	58,5
Ignorance	5	12,2
Don't know	17	41,5

More than 55% of parents surveyed do not adhere to vaccination because of the effects observed in children after vaccination.

Fully immunized children

Table XIII: Distribution of Yahisuli's parents in 2018 according to the number of fully immunized children

Fully vaccinated children	Staff	%
15 – 17	5	5,2
12 – 14	2	2,1
9 – 11	3	3,1
6 – 8	12	12,5
3 – 5	28	29,2
1 – 2	31	32,3
0	15	15,6
Total	96	100

15.6% of the children of the parents surveyed had not been fully vaccinated. The average number of children fully vaccinated is 4.

Anxiety about vaccination

Table XIV: Reasons given by Yahisuli's parents in 2018 for fear of vaccines (n=96)

Reasons for fear of vaccines	Staff	%
Pleurs	45	46,9
Side effects	41	42,7
Misunderstandings	5	5,2

Our respondents' fears about bringing their children to immunization reside mainly in the incessant crying after vaccine administration (46.9) and adverse post-immunization events (42.7%).

Method of vaccine administration

Reason of preference for oral administration

Table XV: Parents' opinion on reasons for preference of oral vaccine administration (n=70)

Reasons for oral administration of vaccines	Staff	%
No side effects	45	64,3
Easy to administer	22	31,4
Don't know	3	4,3
Total	70	100

The majority of parents prefer the oral route because it does not cause side effects (64.3%). Ease of administration was also preferred by 31.4% of the parents surveyed.

Reason for preference of administration by injection

Table XVI: Reasons given by parents for their preference for vaccine administration by injection (n=26)

Reasons for injectable vaccine administration	Staff	%
Effective	8	30,8
Immediate effects	18	69,2
Total	26	100

Immediate effects and effectiveness are the main reasons for injection preference.

Category of vaccinators

Table XVII: Opinion of Yahisuli's parents in 2018 on the category of preferred vaccinators

Preferred vaccinators	Staff	%
Nurse	78	81,3
Doctor	11	11,5
Midwifery/midwife	7	7,2
Total	96	100

Nurses are preferred vaccinators by 81.3% of the parents surveyed.

Misunderstandings about vaccines

Table XVIII: Opinion of parents surveyed on misunderstandings about the round of vaccinations or immunization (n=96)

Misunderstanding about vaccines or vaccination	Staff	%
Toxic products	53	55,2
Vaccines hide dark intentions	43	44,8
Products that have nothing to do with the disease	28	29,2
Sterilize the population	23	23,9
Waste of silver for polio	23	23,9
Operation contrary to divine providence	18	18,8
Means to enrich the health authorities	18	18,8

55.2% of parents think that vaccines are toxic. The population suspects that vaccines provided free of charge by large organizations are hiding dark intentions (44.8%). The others think that they are products that have nothing to do with the disease (29.2%), sterilize the population (23.9%), etc.

Respondents' suggestions

Table XIX: Suggestions from Yahisuli's parents to health managers and their partners (n=96)

Parents' wishes	Staff	%
Support in drugs and equipment	59	61,5
Staff motivation	14	14,5
Take into account other basic needs	9	9,4
Raise community awareness about vaccines	5	5,2
No idea	9	9,4
Total	96	100

More than 60% of the parents suggested that health managers and their partners provide support in terms of medicines and equipment for children.

Discussion

Characteristics of parents

Certain characteristics of the parents in charge of the children may explain immunization behaviors. They may also be responsible for not keeping immunization appointments and thus influence the follow-up of the child's immunization program. For example, age, education, marital status, religion, occupation, number of children under five, media exposure, area of residence, decision-making power, etc., may also influence the child's immunization schedule.

In their study of the individual and environmental factors associated with full immunization of children in rural Burkina Faso, Sia, Kobiane, Sondo and Fournier [18] found a link between the occupations of mothers and their spouses and the full immunization of their children.

On the subject of education level, it should be noted that this reflects the progress made by a population in terms of schooling and even development. It contributes to the improvement of the living conditions of household members and society in general. The level of education also influences reproductive behavior, the use of modern contraception, health behavior, and hygiene and nutrition habits.

Data from DHS-DRC II showed that 19 percent of Congolese women have never attended school and therefore have no education, compared to 8 percent of men. Thus, the proportion of uneducated women is about twice as high as that of men [5].

A 2006 study conducted in Benin in 2006 on factors associated with parental behavior in immunization found that 74.2% of parents were between 21 and 35 years of age, of which 50.8% were in school and less than 20% were unemployed. Birth rank was second with extremes ranging from 1 to 8 [6].

Ouedraogo L.T. et al. 19] also found that maternal illiteracy (73.3%) influenced adherence to childhood immunization. Low education levels can be a handicap to access to information on immunization. The higher level of education of fathers could be an important asset if they are involved in sensitization activities.

The proportion of married people observed in this work is consistent with the results of the DHS-DRC II survey. The survey found that more than six out of ten (64%) lived in a union: 46% of married women and 18% in a consensual union [5].

Most of our respondents belong to Christianity. This is due to their numbers in the population. However, there is reason to suggest that, according to a study carried out in Benin in 2006, parents practicing the traditional religion (48.1%), large households (29.9%) and those whose child was the third born of the family (28.4%) were not vaccinated [6].

Compared to the sex of the last child born alive, Makoutode et al. observed 50.2% of male children [6]. This corroborates the results of our work.

However, Ependja in a similar survey conducted in Opala found a predominantly female sex ratio. This is due to culture. Indeed, according to Bantu culture, a boy is the heir of the family, especially if he is the first born. Therefore, parents have a moral obligation to protect him against certain dubious practices that can negatively influence his fertility. References to rumors or misinformation about vaccines and immunization. This gives female children a chance to be seen in large numbers at the Expanded Programme on Immunization [7].

With respect to media exposure, it should be clarified that the household does not need to own a radio, television or buy a newspaper to have access to it. Many people may be able to listen to the radio or watch television at the home of friends or neighbors. These data are particularly important for the development of education, awareness and information dissemination programs in all areas, including health and, in particular, family planning [5]. The results of the 2013-2014 Demographic and Health Survey found that in DR Congo, men are usually more exposed to the media than women [5].

In this study, the proportion of parents who slept elsewhere or were absent from their homes is justified by the instability of households seeking survival for their families. The population is forced to travel long distances to follow the rotating market program. In addition, with the phenomenon of African solidarity in the event of death, some people are sometimes called upon to spend entire nights away from home. This does not exclude prayer vigils in churches.

The health facilities at Yahisuli are located less than a kilometer from the parents surveyed. However, previous studies have shown that parents do not adhere to vaccination when the health facility is more than a 15-minute walk away. This means that geographical accessibility, household size and religion are factors associated with parents' behavior in vaccinating their children. Accessibility and quality of care are factors that explain the therapeutic

management of patients. Various studies have shown that, in general, health center utilization rates decrease as distances to be traveled increase [7].

Other studies carried out in various contexts have also shown that public health facilities are more solicited by populations that are close to them; and that the distances to be covered are relatively short. For example, in Nigeria, the distance is less than two kilometers, and in Ghana 70% of users are less than three thousand kilometers away [7].

Parents' behavior towards immunization

In this work, 55 out of 96 parents bring their children to a health structure to be vaccinated in order to ensure their protection and prevention against infectious diseases. On the other hand, 41 subjects do not adhere to vaccination because of disease and ignorance as well as fear due to children's incessant crying after vaccination, adverse post-immunization events.

Protection and prevention were also cited as the main reasons for adherence. Those who did not fully vaccinate their children cited fatigue, field work, religion, paralysis, and the ineffectiveness and inconvenience of vaccines. These factors led to 15.6% of children not being fully vaccinated.

These results corroborate those found by Ependja in the rural health zone of Opala. About 68% of parents do not bring their children to a health facility to be vaccinated for fear of anal lesions (32.8%) and diseases (18.8%). The low level of knowledge of the subjects about vaccination in Opala was associated with non-adherence as it found 31.2% of non-respondents and 76.5% of children fully vaccinated. These factors constitute in our opinion a high risk of non-adherence to the immunization program. Ignorance is therefore a factor not to be neglected in the fight against behaviors unfavorable to vaccination [7].

Fear of anal injury, disease, crying and side effects are not dismissed. Indeed, recently, the province of Tshopo is confronted with the resurgence of malaria and anal lesions co-infection. This can be observed in children from 0 to 59 months of age by anal redness relieved by chloramphenicol mixed with alkaloids from tomato leaves in local application. For the other health zones, this phenomenon is new and causes deaths among children under 5 years of age. Unlike the Opala health zone where the disease has been known since time immemorial; allusion made to the song dedicated to this pathology. For the parents, the appearance of this abnormal phenomenon defying modern medicine would be due to vaccination [20].

The disease referred to in the responses of our respondents is only the fever observed in children when certain live attenuated vaccines were administered, notably Bacille de Calmette and Guérin, measles vaccine and DTPHepBHib. These vaccines are given by injection and can induce a mild rise in body temperature. This does not rule out the fear of paralysis of a limb [7].

Regarding vaccination status, Magatte et al. 21] in Senegal, in a comprehensive cross-sectional survey of immunization dropouts among 562

mothers of children aged 10-23 months, found that the proportion of fully immunized children was statistically related to mothers' knowledge of the immunization schedule and the sex of the child. They also found that male children were more likely to be fully immunized. Jennifer [22] found a relationship between birth rank and child immunization status.

Regarding vaccinators and the route of vaccine administration, Moulin said that each vaccine is unique in its presentation, its mode of administration (by injection or by mouth). Injection is preferred in some cultures while the oral route is, depending on the case, appreciated for its ease and analogy with food or depreciated because of its banality. Scarification can be as easily accepted or suspected as a disturbing marking of the body. The personality of the vaccinator by social status, ethnicity, gender, etc. may also be involved [1].

Misunderstandings about vaccines

When it came to vaccines or vaccination, several misunderstandings were raised by our respondents. These corroborate the rumors observed under other skies. A good example of a misunderstanding is the turmoil triggered by the neonatal tetanus vaccination campaign in eastern Cameroon after the WHO decision to eliminate the disease in 1989. This vaccination had been openly offered to young women in reproductive age. This break with the unisex nature of vaccinations raised suspicions in a region already in turmoil: were they not vaccines aimed at sterilizing the population? Misinformation turned to tragedy; children fled from school, a murder took place, a riot atmosphere reigned for a few days, young girls became pregnant just to check their fertility [1].

1] The same rumor has in fact spread several times to other countries in Africa and Asia about vaccines unrelated to tetanus. Rumors about vaccines that are sterilizing, toxic or simply inactive have one thing in common: distrust of the major powers that are suspected of limiting the demographic vitality of the people under the guise of immunization aid [8].

8] Yemen and the Philippines have witnessed sporadic violence, following miscarriages that occurred in the population after vaccination campaigns.

In 2003, in Nigeria, a highly unstable country in the midst of the WHO-sponsored campaign to eradicate childhood paralysis, polio immunization was denounced by the Sharia Supreme Council on a set of arguments against submission to divine providence and malicious interventions by Western powers [9].

Beyond paranoid assertions and rumors of plots, it is true that there are irregularities in the conduct of vaccinations: the interventions planned by the health authorities do not take into account the constraints of the population and the rhythms of work in the fields.

In Mossi country, infantile paralysis is a bird disease related to a jealous deity that should not be thwarted.

The population asks itself the question: why devote so much money and energy to the prevention of a single disease, polio, which has few victims and only sporadically rages, while so many basic needs, such as drinking water or schools, remain unsatisfied?

For Chippaux, the behavior of populations is paradoxical only in appearance, when at the same time they suspect that the vaccines provided free of charge by large international organizations are hiding dark intentions and complain that they do not have access to the latest products of the pharmaceutical industry [10].

10] Inspired by the vision of vaccines as "global public goods" distinct from ordinary medicines, charities have begun to support the spread of expensive new vaccines in tropical countries. 11] However, even this principled and laudable initiative may have appeared to the public as a decision taken over their heads, mobilizing funds and people that could have been better spent in other areas [12].

Conclusion

All in all, the vaccine tools are not exclusively at the service of the State or communities, but are first and foremost at the service of individuals who want to be protected and who wish to benefit from effective immunization corresponding to local risks. This is a historic undertaking that has its letters of glory, but which has also had its tragedies and blunders.

This paradox of vaccinology in the tropics is not inevitable. Thus, we propose to initiate a descriptive and analytical study on the epidemiological surveillance of the adverse effects of vaccines in the expanded program of routine vaccines or in mass campaigns.

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