

Original Research Paper

Audit of the Knowledge, Perception, and Health Promotion with regards to Vaccination in Bamenda Health District, Cameroon

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The Bamenda Health District has constantly been having upsurges of vaccine-preventable diseases, which are sometimes either under-reported or neglected. This was the motivation behind the research topic “Audit of the Knowledge, Perception, and Health Promotion regarding Vaccination in the Bamenda Health District, Cameroon”. The main objective of the study was to carry out an exhaustive audit of the knowledge, perception and health promotion of the population of the Bamenda Health District (BHD) with regards to vaccination programmes. A descriptive, cross-sectional, and explorative design was used for the study in which multistage random sampling was carried out to obtain a sample size of 414 participants. Key findings revealed a lack of robust bottom-up micro-plans for the campaigns; ineffective advocacy and communication plans resulting to weak involvement of related sectors; and inadequate capacity building for vaccinating personnel. In conclusion, the vaccination and immunisation programme in the Bamenda Health District is less efficient, and also ineffective as a result of massive deficiency in knowledge, perception, and insufficient capacity building of the population and stakeholders. It was recommended that every public health stakeholder and the government should redouble their efforts to right the flaws and lapses, both in vaccinations, health promotion, disease surveillance, and epidemic preparedness. The Cameroon government should revamp the health sector as well as create an enabling socio-political atmosphere for efficient and effective vaccination campaigns.

Keywords: Vaccination, Immunisation, Perception, Knowledge, Promotion, Prevention.

INTRODUCTION

Disease prevention and control have constituted a major problem to the public health sector in Cameroon in general and in the North West Region in particular for a pretty long time. This has brought about the emerging and re-emerging of many diseases and epidemics in the North West Region and elsewhere in Cameroon. The North West Region is currently experiencing an upsurge of epidemics of vaccine-preventable diseases such as Poliomyelitis, Measles, Tuberculosis, Yellow Fever, and even Cholera. The current vaccination coverage for the North West region is 68%, far from herd immunity. This is probably due to an inefficient and ineffective vaccination programme over the years.

The situation has become very challenging and aggravated by the socio-political crisis and the war raging on in the Region. Many families have been displaced into the bushes and refugee camps, the adverse consequences notwithstanding. These displaced populations are at very high risk of

contamination, infection, and epidemics, especially as they are staying in forests, slumps, and overcrowded refugee camps. With such mass displacements, disease exposure, incidence, and prevalence tend to rise significantly. Consequently, vaccination and immunisation as well as follow up by way of surveillance, and monitoring become even less efficient. Access to vaccination for newborns and the under-fives in such circumstances is either absent or inadequate.

We therefore require a more robust, flexible and mobile or transferable vaccination and immunisation system that caters for the affected and vulnerable populations and on a large scale. This requires sufficient resources including adequate capacity building of personnel, health education of the populations, and appropriate health promotion strategies. This will go a long way to curb the upsurge of infectious diseases and improve access to health care for the most vulnerable people.

Brief review of related literature

The World Health Organisation asserts that immunisation prevents illness, disability, and death from vaccine-preventable diseases including cervical cancer, poliomyelitis etc, and that immunisation currently averts an estimated 2 to 3 million deaths every year. Yet an estimated 21.8 million infants worldwide are still missing out on basic vaccines of whom nearly half live in India, Nigeria, and Pakistan. [1][23] The last reported cases of wild polio in India were in West Bengal and Gujarat on 13 January 2011. [1][15] On 27 March 2014, WHO declared India a Polio-free country, since no cases of wild Polio had been reported in the previous three years. [11] As of mid-2015, only Afghanistan and Pakistan still had wild Polio cases. The most recent WPV case in West Africa (excluding Nigeria) occurred in Tahoua province, Niger, with the onset of paralysis on 15 November 2012. [26]

Given these dynamic properties, attention should be given to intervention strategies that complement childhood vaccination. For example, improvement in hygiene and sanitation can reduce the reproduction numbers in problematic regions, and adult vaccination can lower adult transmission. [26][19].

Problem statement

The eradication of some diseases such as Poliomyelitis from the world is on the cusp of success, yet with some regions still maintaining transmission. Improving our understanding of why some regions have been successful while others have not will help with both global eradication of Poliomyelitis and the development of more efficient and effective vaccination strategies for other pathogens. [26] Given these dynamic properties, attention should be given to intervention strategies that complement childhood vaccination. [26][19]

Currently, there has been a decline of vaccination coverage in the Bamenda Health District from 77% in 2017 to 75% in 2018 and a decline from 78% to 62% coverage for the whole North West Region. Therefore, one can rightly say there is no herd immunity acquired. The lapses and challenges in the Bamenda Health District therefore need to be addressed and improved upon, in order to ensure efficient and effective vaccination campaigns.

It was in the light of the ongoing situation that we perceived the need to investigate the flaws and lapses affecting vaccination programmes in terms of the knowledge, perception, and health promotion of the population of the Bamenda Health District (BHD) so as to build an efficient and effective vaccination programme for the District.

Objective of the study

The general objective was to carry out an exhaustive audit of the knowledge and perception of the population of the Bamenda Health District with regards to vaccination programmes and health promotion.

METHODOLOGY

Research Design: The research design was a descriptive, cross-sectional, explorative, and comparative one.

Random Sampling: Sample size (n) = 414 Respondents.

This was determined by the Fisher et al formula:

$$n = \frac{Z^2 P(1-P)}{d^2} \quad (\text{Fisher et al 1998})$$

Where:

- n = the desired sample size where the study population is equal to or greater than 10,000.
- Z = Standard normal deviate corresponding to 95% level of confidence (CI = 1.96).
- p = Estimated prevalence of characteristic of interest (unsound practices) = 0.5 (Since that of the Bamenda Health District is not known).
- d = Level of precision (set at $\pm 5\%$).

Research Tools

- A Semi-Structured Questionnaire
- Focus Group Discussion
- Key Informants Questionnaire

KEY FINDINGS

The study revealed the following key findings:

- Tremendous deficiency in capacity building and health promotion with regards to vaccination campaigns resulting to poor knowledge and perception of vaccination and immunisation campaigns.
- A hostile and non-conducive socio-political climate for efficient and effective vaccination programmes.
- Poor mobilisation of resources, both local and otherwise.
- Lack of robust bottom-up realistic micro-plans for the campaigns.

A total of 414 subjects participated in the study. The study participants were aged from fifteen to slightly over 55 years, with a mean age of 30 years. Sixty-two percent of the respondents were aged 34 years and below.

Community members constituted the most common designation (45.4%) among the study participants, followed by nurses (20.8%), Assistant nurses (14.5%), midwives, student health personnel, laboratory technicians, and doctors constituted 11.8%.

Knowledge about Vaccination Coverage

Completion of routine childhood immunisation could not be ascertained by the majority of the study participants - 235 (61%), due to a lack of supporting documents. Only 95 of the respondents (25%) ascertained that they completed routine childhood immunisation while 54 of them (14%) affirmed that they had not completed the immunisation coverage.

Tuberculosis (BCG vaccine/scar) had 100% complete vaccination according to 384 participants; Meningococcal Meningitis had 372 (97%) while Rubella (German Measles) and Yellow Fever each had 369 (96%) of the participants who declared having completed vaccination. None of the participants had Hepatitis A or Ebola vaccination at all.

Looking at tables 1&2 above, the study participants were asked if they knew which vaccines to get for self, for children, the need for Polio Vaccine, and how the vaccine for Polio works. The results revealed that 64% and 68% knew vaccines to get for self and children respectively.

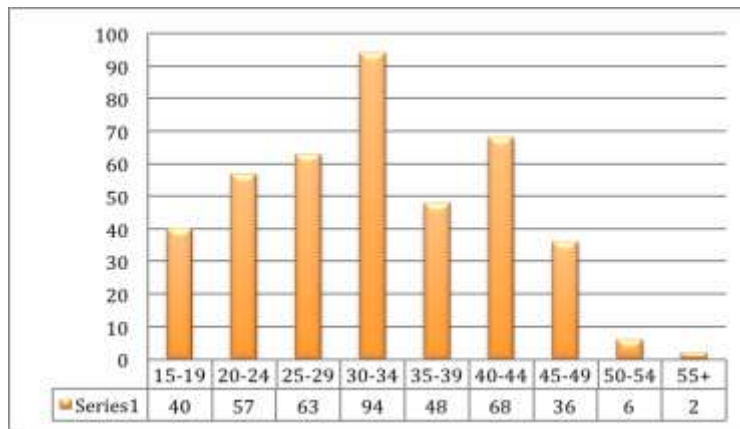


Fig 1: Bio-demographic Characteristics of Respondents (n=414)

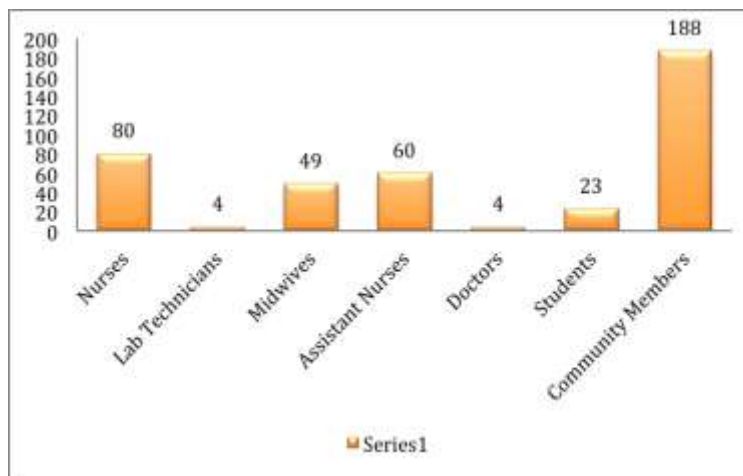


Fig 2: Designation of Participants (n = 414)

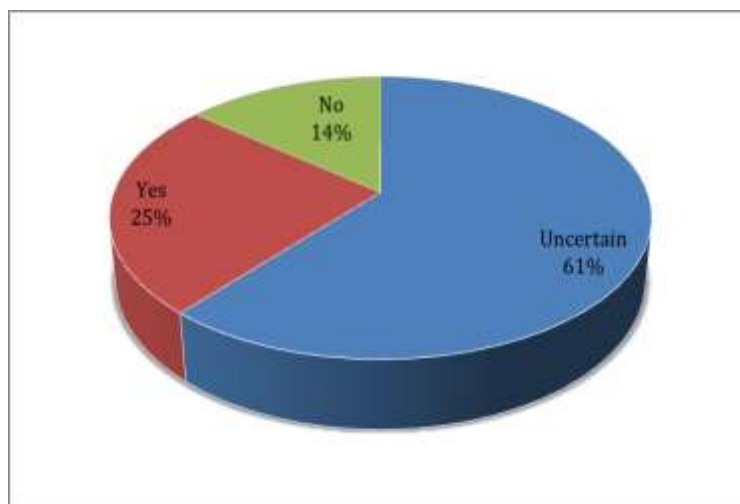


Fig 3: Vaccination Coverage Among Adults (n = 384)

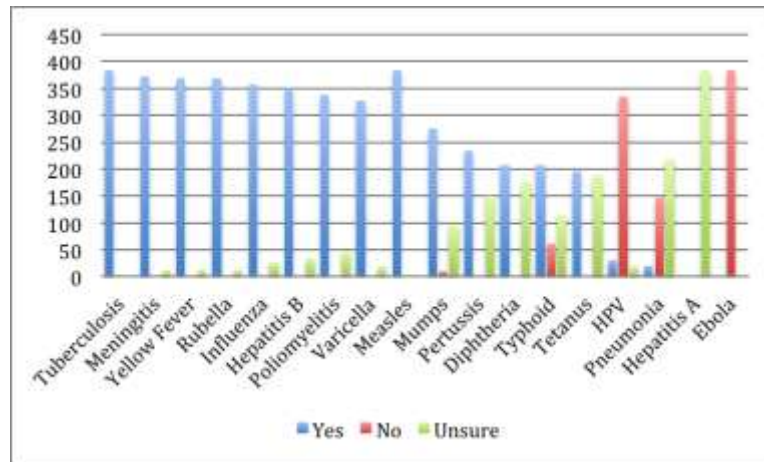


Fig 4: Completion of vaccination for Various Diseases: (n = 384)

All (100%) respondents said there is need for Polio Vaccines and 56% of the respondents knew how Polio Vaccine works. The non-health personnel were also asked if they had had any training on how to administer the vaccine. Just over a half of them (59%) answered in the affirmative. The remaining 41% of them had no training on how to administer the vaccine, and of the 111 who had had the training, 98 (52%) of them were satisfied with the skills acquired as against the rest 48% who were not satisfied with the knowledge acquired.

PERCEPTION

Statistical Analysis

*CI = 1.96 - 95% and Significance Level = 5% (0.05); Software: Stata.

When asked if they were at risk of chickenpox, measles, and Polio, about half of the respondents felt they were at risk of Polio (51%) and Measles (47%). Just 2% of the respondents felt that they were at risk of chickenpox.

HEALTH PROMOTION

The study participants (n = 384) were asked about their understanding of "Health Promotion", the role of health promotion and the sectors that have to do with health promotion. Their responses were as follows:

Four per cent of the participants knew that helping people to change their lifestyle in order to improve their health status and/or living standards was the meaning of health promotion, while the remaining majority of (96%) of them had either partial or incorrect responses.

Sixty-Five respondents (17%) of the study participants knew that health promotion is a societal and political venture and not medical service, and that the health personnel only advocate and enable it. The rest gave incorrect responses.

Eighty-one (21%) of study participants knew that the legal sector has something to do with health promotion, 18% knew of the Christian council and a low 7% knew of the Public works department.

DISEASE PREVENTION

When asked about what is required of primary prevention of disease, only 61 (16%) of the participants knew that health promotion and specific protection are required for primary prevention of disease. A majority of the respondents (84%) did not know what is required for primary prevention of disease, giving various wrong responses.

When asked about the approach to health promotion whose aim is to increase control over one's physical, social and internal environment, only 81 (21%) of the participants knew that self-empowerment approach aims at increasing control over one's physical, social and internal environment. Seventy-nine percent (79%) of the respondents gave various incorrect responses.

DISCUSSION

The age range in this study is closely similar to that of a sample of Angolan soldiers on whom a similar study was carried out by Bing et al (2005) on HIV Preventive and Control Interventions even though in the present study we are dealing with the prevention of Poliomyelitis through efficient and effective vaccination and immunisation. Participants' ages ranged from 18 to 51 years, with an average of 29 years.

In another similar cross-sectional study with qualitative and quantitative components implemented in Uganda in September 2005 on infection prevention, the majority of participants were nursing assistants, a physician and support staff with minimal professional health qualifications. This was as a result of an acute shortage of health staff in Uganda. The same phenomenon of shortage of staff is peculiar in the Bamenda Health District.

Shortage of health workers could negatively influence access to, and quality of disease prevention and health care. Therefore, recruitment, retention, and motivation of staff are of crucial importance.

The lack of supporting documents to determine vaccination coverage is pretty critical and dangerous in the sense that this particular population is not very sure of being adequately immunised and are consequently prone or exposed to vaccine-preventable diseases.

Table 1: Knowledge about vaccines

	Frequency	Percentage
Knew which vaccines to get for self (n=188)		
Yes	120	*64
No	68	36
Total	188	100
Knew vaccines to get for child (ren): (n = 300)		
Yes	204	*68
No	96	32
Total	300	100
Need for polio vaccine: (n = 300)		
Yes	300	*100
No	0	0
Total	300	100
Understand how vaccines work: (n = 384)		
Yes	215	*56
No	169	44
Total	384	100

Table 2: Training on how to administer the Polio Vaccine: (n = 188)

Any form of training on how to administer the Polio Vaccine?	Frequency	Percentage
Yes	111	59
No	77	41
Total	188	100
Satisfied the skills you acquired during the training?		
Yes	98	52
No	90	48
Total	188	100

Table 3: Reasons for Vaccine Resistance and Denial

Variables	Yes	No	T-stat	P-value	DF
In the early 1990s Tetanus Toxoid was allegedly used to render women of childbearing age sterile for political reasons.	305	79	14.06	0.00	383
In 2016 it was rumored the Ebola Trial Vaccine in Bamenda was intended for the gradual reduction of the North West population.	371	13	46.56	0.00	383
Last year political activists discouraged the populations of the Anglophone regions from receiving vaccines from the Cameroon government, describing them as having been poisoned.	376	8	61.65	0.00	383

*All variables have a P-value of less than 0.05. They are therefore significant to the prevalence in question.

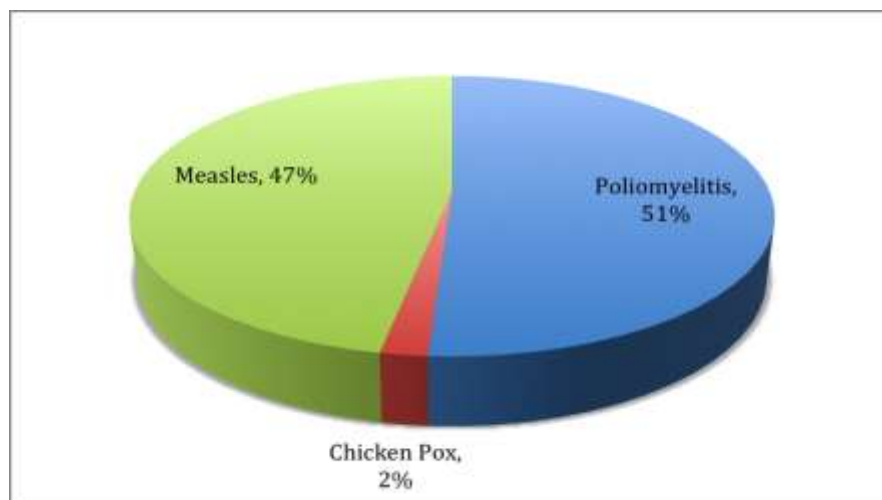


Fig 5: Risk Perception with regards to Chicken Pox, Measles and Polio. (n = 384)

Table 4: Understanding of Health Promotion: (n = 384)

Response	Correct answer	Partially correct	Wrong answer
Helping people to change their lifestyle in order to improve their health status and / or living standards.	*17 (4%)		
It is disease prevention and disease management.		82 (21%)	
The involvement of other public sectors in health issues.		14 (4%)	
It is the same like Primary Health Care.		23 (6%)	
Building more government hospitals and clinics.			51(13%)
Balanced diet, good hygiene and sanitation.		70 (18%)	
The satisfaction of basic needs of the population.		5 (1%)	
Respect of democracy, human rights and freedoms.			44 (12%)
Sufficient food, potable water, electricity, good roads.		30 (8%)	
Equal opportunities and salary increase to all workers.			48 (13%)

* Only 4% with the correct answer.

Table 5: Responsibility for health promotion: (n = 384)

Response	Correct	Wrong
(a) Health promotion is primarily a medical service and not a societal and political venture		81 (21%)
(b) The Ministry of Health is should carry out health promotion.		115 (30%)
(c) The sole responsibility of the World Health Organisation is health promotion.		73 (19%)
(d) Health promotion is a societal and political venture and not medical service. Health personnel only advocate and enable it.	*65 (17%)	
(e) All of the above options are correct.		50 (13%)

* (d) is the correct answer

Table 6: Sectors having to do with health promotion: (n = 384)

Response	Yes	%	No	%
Legal Sector	81	21	303	79
Christian Council	69	18	315	82
Public Works Department	27	7	357	93

Table 7: Primary prevention of disease: (n = 384)

Response	Number	%
(a) Early diagnosis and treatment	200	52
(b) Health promotion and specific protection	61	*16
(c) Disability limitation and rehabilitation	92	24
(d) All of the above	31	8
Total	384	100

* (b) is the correct answer

Table 8: Approaches to health promotion: (n = 384)

Response	Number	%
(a) Behaviour change approach	50	13
(b) Collective action approach	34	9
(c) Self empowerment approach	81	*21
(d) All of the above	219	57
Total	384	100

* (c) is the correct answer

Tuberculosis (BCG vaccine/scar) had 100% complete vaccination according to 384 participants. This is controversial considering the fact that currently there is a full Tuberculosis ward in the Bamenda Regional Hospital with both acute and chronic cases of the disease. This portrays a re-upsurge of Tuberculosis in the health district, though. It may also be opportunistic due to other factors like HIV/AIDS, and also due to the admission of cases from without the health district.

According to the World Health Organisation (WHO) standards, vaccination and immunisation are considered full and acceptable after at least 95% of the target population has been fully and effectively immunised, meaning that the target population must have achieved herd immunity. This is not the case with the long list of vaccine-preventable diseases in the Bamenda Health District. Much still needs to be done to

effectively achieve herd immunity in the Bamenda Health District.

Immunisation rate is one of the best public health outcomes and service indicators of the last 100 years. Parental decisions regarding immunisation are very important to improve immunisation rates. This is in line with a study carried out by Omer Outaiba B Al-lela et al (2014) on parents' knowledge and practice regarding immunisation related to pediatrics' immunisation compliance whereby, 528 children born between 1 January 2003 and 31 June 2008 were randomly selected from five public health clinics in Mosul, Iraq. The immunisation history of each child was collected retrospectively from its immunisation record/card. The results revealed that about half of the studied children, (n = 286) 56.3% were immunised with all vaccination doses. These children were considered as having had complete immunisation. 66.1% of the parents were found to have adequate Knowledge and Practice (KP) scores. A significant association of immunisation completeness with total KP groups ($p < 0.05$) was found.

Therefore one can conclude that in the future more efforts are required to improve immunisation rate as well as parents' knowledge and practice. The study results reinforce recommendations for the periodic assessment of immunisation rate and the use of educational programmes to improve the immunisation rate, knowledge, and practice.

With regards to Knowledge about vaccines, there is another Knowledge gap, which corroborates with the study carried out by Omer Outaiba B Al-lela et al (2014) earlier cited above in this discussion. As a matter of fact, all the respondents ought to be fully informed about vaccines, their schedule and coverage, both for adults and children. This knowledge gap is pretty detrimental to vaccination efficiency and effectiveness. This confirms that there are limited refresher courses for vaccinating personnel as alleged by some of the Key Respondents.

Concerning vaccine resistance and denial, all variables have a P-value = 0.00, ($P < 0.05$). They are therefore significant to the prevalence under study. Rumours and negative campaigns can be terribly devastating and ought to be handled promptly. This corroborates with the findings of Ndipowa et al (2016) on Vaccination and Immunisation Misconceptions in Cameroon. The findings revealed that the resistance against and refusal of vaccines by some populations has marred the efficiency and efficacy of vaccination campaigns against diseases of epidemic potential such as Poliomyelitis, Measles, Yellow Fever, Tetanus, etc. This problem could also be attributable to inadequacies in policy, management, and governance. Effective vaccination and immunisation coverage in Cameroon, therefore, needs to be reviewed and revamped. Meanwhile, It is worth noting that the majority of the respondents had the perception that they could be victim of any of the vaccine-preventable diseases in case of an outbreak.

It is not quite impressive but pretty discouraging to observe that only 17 (4%) of the participants (n = 384) had a sound notion of what health promotion is all about. The key findings with regard to health promotion and disease prevention corroborate with a study carried out by Sarfaraz Md. et al (2017) on "Assessment of Knowledge, Attitude and Perception among Mothers towards Immunisation" in a tertiary care teaching hospital in Karnataka, India. The study aimed at promoting childhood immunisation by providing information and knowledge to mothers regarding immunisation. A prospective interventional study was conducted on 103 mothers for a period of six months in a tertiary care teaching hospital in Karnataka. 103 mothers were enrolled in the study,

of which Seventy-seven mothers (74.75%) were uneducated, which was the main reason for lack of knowledge on immunisation.

Most of the mothers in the pre-intervention phase got scores ranging from 2 to 4 out of 20 points and in the post-intervention phase they got scores ranging from 10 – 12 points out of 20. A significant difference was observed in the Pre and Post-intervention scores, which indicated that the level of knowledge among mothers was improved after counselling sessions. A Chi-square test was used to analyse the pre and post-intervention scores and was found to be significant ($p < 0.01$). It was therefore suggested that proper health education and health promotion interventions be taken as measures to improve knowledge, attitude, and perception of mothers towards immunisation as a disease prevention tool. This recommendation is very applicable to the Bamenda Health District situation.

CONCLUSION

The vaccination and immunisation programme in the Bamenda Health District is less efficient and ineffective as a result of massive deficiency in knowledge, perception, and insufficient capacity building of the population and stakeholders. Intensive health education and health promotion should therefore be a crucial undertaking by the public health authorities.

RECOMMENDATIONS

- Every public health stakeholder and the government need to increase their efforts in righting the identified flaws and lapses, both in vaccinations, health promotion and disease prevention.
- The government should revamp the health sector and create an enabling environment for efficient and effective vaccination campaigns.

SUGGESTIONS FOR FURTHER RESEARCH

1. Effective Vaccination and Immunisation Coverage of Displaced Populations in Cameroon: serum Immuno-Antigen level of various pathogens.
2. KAP study on Disease Prevention, Control and Health Promotion in Bamenda Health District.
3. The Chemical Composition of the Polio and Tetanus Toxoid Vaccines used in Vaccination Campaigns in Cameroon.

CONTRIBUTIONS

All authors read and approved the final manuscript.

COMPETING INTERESTS

We declare we have no competing interests.

The research article is original and has not been submitted or accepted for publication elsewhere.

REFERENCES

- [1] World Health Organization (WHO), World Immunization Week (2015) Close the immunization gap Immunization coverage; 24-30 April 2015; Fact sheet N°378, Reviewed November 2014.
- [2] Republique du Cameroon, Group Technique Central (2000) Norms et Standards du Programme Elargi de Vaccination (PEV), MinSanté, PEV. 1776

- [3] Republique du Cameroon, 2009, Strategie Sectorielle de Santé (2001-2015) Edition 2009; Yaoundé.
- [4] Kounteya Sinha (15 May 2012). "WHO to declare polio global health emergency". The Times of India. Retrieved 3 June 2012.
- [5] Svea Closser (16 August 2010). Chasing Polio in Pakistan: Why the World's Largest Public Health Initiative May Fail. Vanderbilt University Press. pp. 40–41. ISBN 978-0826517098. Retrieved 27 May 2012.
- [6] Silver, Cary, ed. (May 2001). "Pakistani Rotarians help immunize 27 million children in NIDs". The Rotarian (Rotarian International): 54. ISBN: S5LQ-BE8-DD3Q. Retrieved 28 May 2012.
- [7] "Polio True Stories". Country Programme Human Interest Stories. UNICEF. Retrieved 27 May 2012.
<http://www.polioeradication.org/mediaroom/newsstories/Polio-Teams-Support-Health-of-Remote-Communities-inNigeria/tabid/526/news/1273/Default.aspx#sthash.qpwl4TT.dpuf>
- [8] Gregory Warner (August 09, 2015 8:35 AM ET) Catholic Bishops In Kenya Call For A Boycott Of Polio Vaccines.
- [9] Cockburn WC: The work of the WHO Consultative Group on Poliomyelitis Vaccines. Bull World Health Organ. 1988; 66:143–154. [PMC free article] [PubMed].
- [10] Polio Global Eradication Initiative (2010) Infected Countries. Geneva, Switzerland: World Health Organization;. (<http://www.polioeradication.org/Infectedcountries.aspx>). (Accessed May 1, 2012).
- [11] Centers for Disease Control and Prevention (CDC)(2012) Progress toward interruption of wild poliovirus transmission - worldwide, January 2011-March 2012. MMWR Morb Mortal Wkly Rep. 2012;61:353–7. [PubMed]
- [12] Kaura G, Biswas T. (2012) India reaches milestone of no cases of wild poliovirus for 12 months. BMJ. 2012;344:e1328. [PubMed].
- [13] Center for Disease Control (2012) Update on Vaccine-Derived Polioviruses. MMWR Morb Mortal Wkly Rep 2012. 2006;55:1093–7. [PubMed]
- [14] Bancroft-Hinchey T. (2012) India Free of Polio [Internet]. Moscow: Pravda Ru; 2012 Jan 15[cited 2012 Mar 2]. Available from: http://english.pravda.ru/health/15-01-2012/120233-polio_india-0/.
- [15] Press Information Bureau, Government of India (2012) One year of polio free India [Internet]. New Delhi: National Informatics Centre;2012 Jan 12[cited 2012 Mar 2]. Available from: <http://pib.nic.in/newsite/erelease.aspx?relid=79524>.
- [16] United States Embassy Bangui (2010) U.S. assistance to eradicate polio [Internet]. Bangui: US Embassy Bangui; 2010 Mar 30 [cited 2012 Mar 2] Available from:http://bangui.usembassy.gov/pr_20100330.html.
- [17] Polio Global Eradication Initiative (2010) Infected Countries. Geneva, Switzerland: World Health Organization; 2010. (<http://www.polioeradication.org/Infectedcountries.aspx>). (Accessed May 1, 2012).
- [18] Australian Capital Territory (2013) ACT Immunization Inquiry Line (02) 6205 2300)
- [19] Taylor C. E., Cutts F., Taylor M. E. (1997) Ethical Dilemmas in Current Planning for Polio Eradication. American Journal of Public Health. 1997;87(6):922–25. [PMC free article] [PubMed].
- [20] CRTV Yaoundé. (2015) National Luncheon Date News presented by Chonko Becky Bisong at 14: 48 pm on the 24th November, 2015.
- [21] Bryan T. Mayer et al (2013) Successes and Shortcomings of Polio Eradication: A Transmission Modeling Analysis. American Journal of Epidemiology, Volume 177, Issue 11, 1 June 2013, Pages 1236–1245, <https://doi.org/10.1093/aje/kws378>. Published: 06 April 2013.
- [22] World Health Organization. (2015) Vaccination coverage cluster surveys – reference manual. Geneva: World Health Organization; 2015.
- [23] World Health Organization. WHO vaccine-preventable diseases: monitoring system. 2016 global summary. http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=LBN&commit=OK. Accessed 30 Jun 2017
- [24] <http://www.polioeradication.org/mediaroom/newsstories/Polio-Teams-Support-Health-of-Remote-Communities-inNigeria/tabid/526/news/1273/Default.aspx#sthash.qpwl4TT.dpuf>
- [25] WHO, "Kano, Nigeria, Informs WHO of the Intention to Resume Polio Immunization Campaigns," Press Release, 30 June 2004, <http://www.who.int/mediacentre/news/notes/2004/np16/en> (accessed 10 April 2009).