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Assessment of parents knowledge towards the benefits of child immunization in Maiduguri, Borno State, Nigeria

Abstract

Introduction: Ethical requirements of health services provision demand informed consent from consumers as part and proof of patient's rights. Legally, parents decide for their minors on matters of acceptance or rejection of health services including immunizations. Ill or misinformation often results in controversies resulting in rejection and even resistance of child immunization services. Viewed globally, vaccines are the most cost-effective medical intervention to prevent death and disease. This study described parent's perceptions of the benefits of child immunization, risks of lack of immunization and sources of information on child immunization in Maiduguri.

Method: In the House-hold descriptive survey, the researcher as coordinator worked with two (2) research supervisors and four (4) assistants in each of the wards chosen. Total of six hundred (600) parents (male and female) were administered the survey questionnaire. Forty two (442) of the returned questionnaires were correctly filled giving a valid response rate of 74%.

Results: The responses of 442 parents were analyzed. The generated Socio-demographic data is presented on simple tables and of frequency and percentage, while other variables were tested using X^2 and presented as same. All the X^2 values computed for awareness of benefits of child immunizations, risks of lack of child immunizations and sources of information on immunization were greater than critical value of $X^2(7.512)$ at 3df at 0.05 level of significance. Most parents strongly, suggested that; Demand for full immunization certificate as personal documents will increase acceptance of child immunization.

Conclusion: All Ho: were rejected to conclude that parents are significantly aware of benefits of immunization and risks of its lack or refusal as well as access to local information sources on child immunization activities. Parents suggested ways of improving acceptance of immunization needs to be harnessed and other determinants of acceptance of child health services needs to be explored in further studies.

Keywords: assessment, knowledge, immunization, benefits, child, parents, risks, information, Maiduguri, borno state

Volume 3 Issue 2 - 2017

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Received: December 06, 2016 | **Published:** June 20, 2017

Background to the research

The process of change and adoption of new strategies and practices is often fraught with problems, suspicious and skepticisms, since antiquity. This becomes more so, where people are ill informed, poorly educated and least mobilized. "Despite our efforts to educate parents about the need to vaccinate their children through discussions of vaccine preventable diseases, the effectiveness of vaccines towards preventing them, and realistic chances of vaccine-associated adverse events, some decline to have their children vaccinated".[1]

In the last decade, child immunization activities; oral polio immunization in particular has been shrouded in controversies, more so in northern Nigeria. The scandal seems to be rooted in and under -pinned by complexes of ethno-religious and political factors compounded by low literacy. Fallouts of the scandal seems to incline towards resistance, rejection and outright or active opposition of supplemental immunization activities so also is observable passive and gradual weakening and vanishing of routine immunization in clinics.

Parents are critical and major players in deciding for or against health activities that target children. Parents in Maiduguri seem to be affected adversely by the lingering dilemma of the polio controversy and this may be a factor behind common rejections of Oral polio vaccines.

Statement of problem

Do parents in Maiduguri have correct understanding of the benefits of child immunization? "Although most parents believe they are safe, up to 25% have serious misconception about vaccine safety that may lead them to refuse some or all immunizations".[1] In Nigeria, immunization activities are it routine, supplemental and emergency or outbreak use of vaccine for the prevention of vaccine preventable diseases have been fraught with problems.

In recent times "polio controversy" referring to community or family block rejection, resistance and even outright opposition of immunizations are common incidents in Nigeria, particularly in the North. "According to an AAP Periodic Survey of Fellows, 79% of

pediatricians have had one or more instances of parents refusing to allow their child or children to be vaccinated".[1]

There are signs of improvements in some health services, particularly in child immunization. The Government has taken many measures to improve immunization and to eradicate polio. In the case of polio, 2007 was the year with the lowest polio incidence since 2002 and the lowest incidence ever of type 1polio, the most virulent of all polio viruses. Despite these recent improvements, Nigeria is not likely to achieve the health related Millennium Development Goals.[2]

It is well known that, immunization or vaccination is the cheapest and most effective remedy against vaccine preventable infections (VPI). Parents in Maiduguri area often reject or handle immunization activities with skepticism this might ensue from low understanding of its benefits or risks of its lack. Are parents in Maiduguri aware of the benefits of child immunization? How does correct or wrong understanding of parents impinge on acceptance or refusal of Child immunization?

Area of study

Borno state "home of peace" lies within latitude 10n to 14N and longitude 11.30E to 14.45E at the verge of the south of Sahara desert in the North East corner of Nigeria. Borno state is occupied by a population of 4,151,193 people, population density of about 60/sq. Km according to 2006 the provisional census figure and is the state with the largest land mass of 61,435sq.km in the country. The entire Northern and Eastern borders of the state are international boundaries of Niger, Tchad and Cameroun. The whole portion of Lake Chad shared between Nigeria and these three Franco-phone neighboring countries is in Borno state. To the South and West are Adamawa, Gombe and Yobe states as its immediate internal neighbors.

Miaduguri is highly cosmopolitan, both Nigerians and foreigners are seen freely owing to its location at strategic boundary of three countries. The two local Governments areas of Maiduguri area i.e Maiduguri Metropolitan Council (MMC) and Jere are mainly made up of Kanuri and Shuwa Arabs. However, Babur/Bura, Margi, Chibok among many other local Borno languages are commonly spoken, Hausa is also widely used by visitors and non Hausa Borno peoples.

Wards of Jere LGA are Alau, Dala, Dusuman, Galtimari, Gomari, Gongulong, Khaddamari,Mairi, Maimusari**,** Mashamari, Old-Maiduguri and Tuba. While MMC is made up of Bolori I &II, Shehuri I&II, Gwange I&II, Maisandari I&II, Fezzan, Hausari, Gamboru and Lamusula wards.

Islam and Christianity are both practiced by Maiduguri inhabitants. These religions obviously has strong grip on the people and to a remarkable extent determining their culture, values, beliefs and choices. All levels of health services delivery facilities; tertiary (referral), secondary and primary health care institutions are located within geographic reach of Maiduguri city dwellers. There are also many for- profit western style health services providers and facilities that complement the public facilities. These Government and private health services provision facilities are expected to and some do provide some aspects of immunization on routine and supplemental bases. Alternative and complementary health providers of the African orthodox forms are reasonably visible in Maiduguri, Borno State, so also are prayer houses. These are said to be often visited for healing and protection.

Scope of the study

The study covered the descriptive exploration of what parents perceive or see as the benefits of child immunization among male and female parents of children aged 5years and below. It is restricted to residents of Maiduguri during the period of sampling and data collection.

The theoretical foundations of the study

The Epidemiological triangle

In 1798, Edward Jenner established immunization as the best method of specific protection against vaccine preventable diseases. This has been expanding with increasing vaccines produced of recent against more infectious agents with remarkable desired outcomes. The epidemiological triangle (epid-triad), a model for disease prevention and control can be a good illustration of vaccination as indispensible preventive measure. Immunization is the inoculation or exposure of the host to weak agent so as to develop resistance and overcome the specific potent or virile agent in the event of future contact.

The host and agent share the same environment, where the host is weak and has contacts with the agent, disease may be developed. The triangle makes it clear that, the environment, the host, the agent or all simultaneously can be manipulated to effect disease prevention and control. Here host resistance is induced using weak agent. Immunization is manipulation of both host and agent to induce host resistance Figure 1.

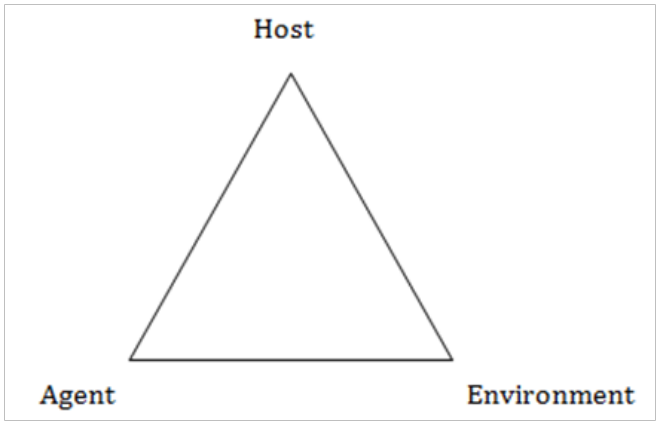

Figure 1 The epidemiological triangle.

The health belief model

A frame work that makes the need for awareness before health action more succinct is the Rosenstock and Becker's Health-Belief Model.[3,4] This is based on motivational theory, that with right perception a person will have correct knowledge of the benefits of health action and will most likely act decide and take correct health action. It is composed of three components: First an individual's perception e.g. Perception of susceptibility, Perception of seriousness and lastly, Perception of value of action.

Modifying factors: are factors that modulate an individual's perceptions and increase or decrease chances of parents taking correct health action based on removed barrier and perceived benefits of the action.

Modifiers cut across: Demographic variables e.g age, gender, race,

ethnicity, etc, Socio-psychological variables e.g., personality, social class, peer and reference group pressure, etc, Structural variables e.g., knowledge about the disease, prior contact with the disease, etc, Perceived threat e.g severity of signs, acuity of onset etc and Cues to action e.g., mass media campaigns, advice from others, reminder post card from a physician or dentist, illness of family member or friend, newspaper or magazine article. Likelihood of action is always the product of perceived benefits of the action minus perceived barriers to the action. The chances of taking recommended preventive health actions like acceptance of immunization haps on awareness of benefits being more than detractors.

Benefits minus barrier equals health action (benefits-barrier=action)

When applied to parents' behaviour towards acceptance or rejection of child immunizations, the Health Belief Model suggests that simply having knowledge and awareness about infectious diseases will not necessarily result in increased visits to a hospital for child vaccinations. Instead, the model specifies four intertwined factors or elements that must be present for knowledge about infectious disease and immunization to be translated into preventative action Figure 2. First a parent must perceive that the child is susceptible to an infectious disease, and second, that person must also perceive that infectious diseases are serious conditions. Third, he or she must believe that there are benefits to taking (immunizations) preventive action. Finally, parent must also perceive that any potential barriers to (immunization) taking preventive actions are much less or outweighed by potential benefits. Based on this model, perceived susceptibility, perceived severity, and perceived benefits are likely to be positively related to immunization behavior, while barriers to taking action are likely to be negatively related to it.

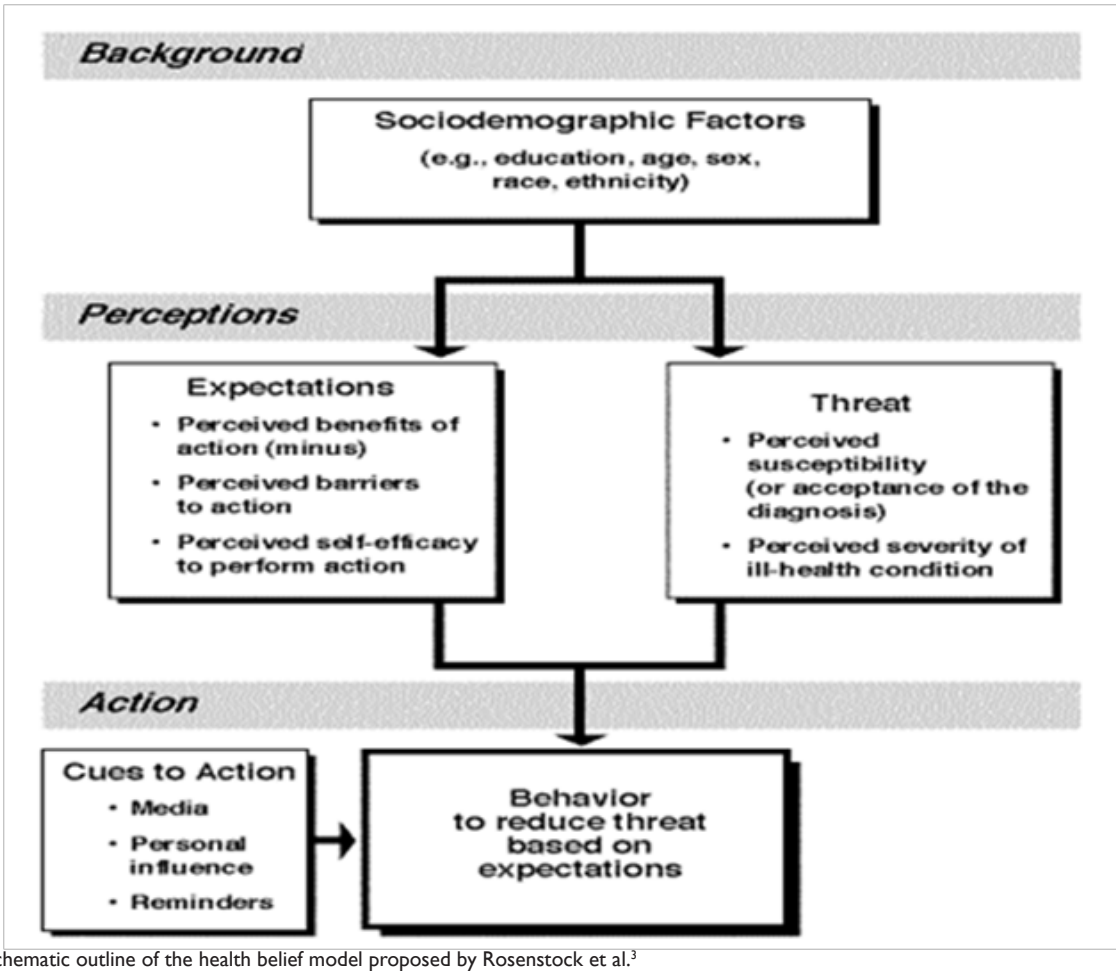

Figure 2 A Schematic outline of the health belief model proposed by Rosenstock et al.[3]

An important variable completes the original Health Belief Model the presence of an internal or external stimulus, or "cue to action," that triggers the individual's health behavior. An internal trigger could be symptoms of illness, whereas external pull factor could include acceptance by social or religious circles, media campaigns about health promotion or interpersonal interactions, such as learning that a friend has been affected by a health problem. Community and special group mobilization has been a powerful stimulus for parents to accept child immunization in Nigeria.

Rationale for the study

Immunization has benefits; lack of immunization poses risks to individuals, families and communities. Globally, in both legal and cultural context, parents decide for children on vital matters like acceptance or rejection of health services, immunization inclusive. Since consent is a major part of ethical and legal requirements of health practice, parents are central in making such important and strategic in decision for children.

Knowledge of the benefits of child vaccination and dangers associated with lack of vaccination could be determinants of parent's acceptance or otherwise of the immunization of their children. All parents and patients should be informed about the risks and benefits of preventive and therapeutic procedures, including vaccination.[1]

Significance of the study

This study will be helpful to ascertain the level of parents understanding or knowledge of the value of child immunization. Determined level of parents understanding could be a valuable tool for redesigning strategy for increasing the acceptance, utilization and coverage with immunization. In essence, when the findings are implemented it could lead to increase in the benefits of and decrease in the dangers associated with lack of child immunization. Findings of this study can also be useful for general public health and child health care planning and delivery. The incredible success of immunizations in dramatically reducing the incidence of vaccine preventable diseases has led to increased public focus on vaccine safety.

Assumptions of the researcher

The researcher is of the view that, when parents do not have correct understanding of the need for immunization it is difficult for them to consent to immunization of their children. The researcher assumes that, assessment of and parent's perception or knowledge of immunization is valuable for general child health care and public health planning and delivery.

Definitions of variables

i. Parent's awareness: Perceptions or views of male or female adult residents of Maiduguri area who has a child aged 5 years or below about the usefulness of child immunization. (Dependent Variable).

ii. Benefits of Immunization: the usefulness, values or gains of child immunization (Independent Variable).

Objectives of the study

The general objective of this study is to assess parent's knowledge of the benefits of child immunization using the following specific objectives:

i. To determine parents understanding of the benefits of child immunization in Maiduguri area.

ii. To identify sources of information on immunization benefits to the parents.

iii. To determine effects of parents understanding on acceptance of immunization.

iv. To identify methods of educating parents on immunization from their view points.

v. To identify implications of parents knowledge on health planning and management.

Hypotheses

Ho: Parents are not significantly aware towards the benefits of child immunization.

Ho: There is no significant awareness of the risks of lack of child immunization among parents.

Ho: Parents do not have significant access to information on child immunization activities.

Immunization and immunity

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease.[1] The World Bank asserted, viewed globally, vaccines are the most cost-effective medical intervention to prevent death and disease.

Immunization is a proven tool for controlling and eliminating life threatening infectious disease and is estimated to avert over 2 million deaths each year. It is one of the most cost-effective health investments, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations. It has clearly defined target groups; it can be delivered effectively through outreach activities, and vaccination does not require any major lifestyle change. Immunizations have reduced childhood vaccine preventable disease incidence by 98-100%. Continued vaccine preventable disease control depends on high immunization coverage.[5]

Introducing a small amount of smallpox virus by inhaling through the nose by making a number of small pricks through the skin (variolation) to create resistance to the disease appears to have begun in the 10th or 11th century in Central Asia. The practice spread; in Asia and Africa, the method was nasal, while in Europe it involved skin punctures. Variolation was introduced into England in 1721. There, in 1798, Edward Jenner, having studied the success of variolation with cowpox- a mild illness- in protecting against smallpox, began to carry out inoculations against smallpox, the first systematic effort to control a disease through immunization.

In 1885, Louis Pasteur developed the first vaccine to protect humans against rabies. Toxoids against diphtheria and tetanus were introduced in the early 1990s; the Baccillus Camette- Guérin (BCG) (against tuberculosis) in 1927; the Salk polio vaccine in 1955; and vaccines against measles and mumps in the 1960s.[6]

Global cost and impact of immunization

WHO/UNICEF study examined financing and impact of immunization programmes in the 72 poorest countries. The estimated total price tag for immunization activities for 2006- 2015 in these countries is US $35 billion, one third of which will be spent on vaccines and two thirds of which will be spent on immunization delivery systems.

Community efforts towards immunization in Nigeria

A position statement was released following a study tour to Egypt on immunization for Nigerian Traditional and Religious leaders sponsored by the European Union-Partnership to Reinforce Immunization Efficiency (EU-PRIME), the tour was undertaken to strengthen the understanding and capacity of the participants regarding immunization. The communiqué[7] was issued; based on the review of the tour and the extensive discussions on the situation of immunization in Nigeria presently, the participants of the workshop made the following conclusions:

i. Immunization as a Preventive mechanism is HALAL (lawful) and necessary in Islam. Immunization is Halal in Islam based on the teachings of the Qur'an and the hadith. One of the hadiths

(traditions) of the Prophet that constitutes a fundamental rule on which the Islamic jurisprudence is built is *"Harm not yourself or others" i.e. according to Shari'a, one has toavoid all that may cause harm to oneself or others".*

ii. The oral polio vaccine is safe. The OPV vaccine used in Pakistan, Iran, Afghanistan, Egypt, Sudan, Saudi Arabia and Indonesia, is of the same high quality worldwide. It is the same that was used in the USA, the UK, France, Turkey and others. There is no evidence to support opinions that it is used to control population of countries of the Muslim world. The issue of American and the western world policy to depopulate Muslim Countries through OPV is a rumour and not substantiated by evidence on the ground as regards Muslim Countries.

iii. All vaccines are certified by the World Health Organization (WHO) before procurement by UNICEF. The process of certification is standard across manufacturers and country of use. UNICEF supports procurement of vaccines in forecasting and pooling resources to procure these vaccines at competitive rates. Vaccines are produced based on global needs and no specific batches are produced for any particular country. UNICEF is not influenced by politics and always kept to its mandate and core commitment for the best interests of the child. Country regulatory bodies such as Nigeria's National Agency for Food and Drug Administration and Control (NAFDAC) certify the safety, potency and lack of contamination of vaccines.

iv. Current intensive efforts to eradicate polio are due to the feasibility of it being eradicated as agreed and endorsed by all countries of the world, including Muslim countries (and Nigeria). Polio causes paralysis and deaths, the virus does not have a reservoir outside humans and a safe vaccine to prevent it is readily available.

v. The participation of Traditional and Religious Leaders in immunization activities in Nigeria should be strengthened at all stages of polio eradication and immunization service programming (including programme communication) to ensure their full ownership and commitment. Other members of the civil society including NGOs and community based organizations should also be actively coordinated in these efforts.

vi. The Traditional and Religious Leaders should articulate their own communication programme to effectively mobilize their communities to utilize immunization services.

vii. A mechanism for monitoring and responding to rumours should be effectively established.

viii. NAFDAC's certification of vaccines coming to Nigeria is commendable and should continue.

The participants of the workshop agreed on the following steps as way forward to address immunization issues in Nigeria:

i. Full briefing of the Jama'atuNasril Islam on the findings of the study tour because of its crucial role in promoting immunization and child survival activities and acceptance in Nigeria.

ii. Communicate the findings of the tour to His Eminence, The Sultan of Sokoto (who is the President General of Jama'atuNasril Islam).

iii. Jama'atuNasril Islam to discuss these issues during its general meeting and come up with clear messages on immunization.

iv. Develop messages that will emanate from JNI and disseminate the messages down to the grass roots.

v. Participants on the tour should be active champions (Change Agents) of immunization in their domains. They should link up with the state teams and develop action plans that may be supported at the state level.

vi. Documents (evidence) from the tour should be re-produced and disseminated widely.

Commonly used vaccines

Routine vaccination[5] is now provided in all developing countries against measles, polio, diphtheria, tetanus, pertusis and tuberculosis. To this basic package of vaccines, which served as the standard for years, have come new additions? Immunization against hepatitis B is now recommended by WHO for all nations, and currently is offered to infants in 147 of 192 WHO Members States. Immunization against Haemophilus influenza type b (Hib) is recommended where resources permit its use and the burden of disease is established; it is provided in 89 countries (only in selected parts of two of those countries). Yellow fever vaccine is offered is about two-thirds of the nations at risk for yellow fever outbreaks. Routine immunization against rubella is provided in 111 countries.

In industrialized countries a wider span of protection is typically provided than in developing countries, often including vaccines against influenza, predominant stains of pneumococcal disease, and mumps (usually in combination with measles and rubella vaccine). Immunization programme may be aimed at adolescents or adults-depending on the disease concerned- as well as at infants and children.

Routine childhood vaccines (CDC) standards

Six vaccines are recommended for children between birth and 6 months of age. They can prevent the 8 diseases described above .Children will also get at least one "booster" dose of most of these vaccines when they are older. Six vaccines are recommended for children between birth and 6 months of age. They can prevent the 8 common childhood infectious diseases. Children will also get at least one "booster" dose of most of these vaccines when they are older Table 1.

Table 1 National routine immunization schedule

Age	Antigen	Organism
Birth	BCG ,OPV0,Heb B0	Bacteria/Virus
6 weeks	OPV1, Penta1, PCV1	Virus, bacteria
10 weeks	OPV2, Penta2, PCV2	Virus, Bacteria
14 weeks	OPV3, Penta3, PCV3	Virus, Bacteria
9 Months	Measles	Virus

Legend: Diphtheria, Tetanus & Pertussis; Hepatitis B (HepBV) and Heamophilus influenza typeB(Hib); Polio Vaccine; Pneumococcal Vaccine; Rotavirus Vaccine and Bacillus Calmette-Guerin (BCG).

Routine immunization schedule in Nigeria stipulates that infants should be vaccinated with the following vaccines: a dose of Bacillus Calmette-Guerin (BCG) vaccine at birth (or as soon as possible); three

doses of Pentavalent vaccine at 6, 10 and 14 weeks of age; at least three doses of oral polio vaccine (OPV) - at birth, and at 6, 10 and 14 weeks of age; and one dose of measles vaccine at 9 months of age.[6,8]

The benefits and risks of childhood immunization

Review of immunization documents of[6,9] showed that, vaccine is a safe and effective way to give children immunity against a number of potentially serious diseases. Babies are born with a certain amount of natural protection against disease, which comes in the form of antibodies they get from their mothers. However, the natural protection does not last past the first year of life and young children are at risk for a number of diseases that can be serious, and even fatal. Fortunately, parents in Nigeria have free access to some vaccines that can immunize their children against such diseases as polio, measles, mumps, and whooping cough.

Vaccines are safe, and the benefits of immunization far outweigh the risks. There is no reason to suffer from a disease if there is a safe and effective way to prevent it. Many youngsters or children do sometimes have some swelling or tenderness at the spot where the vaccine is injected, and some may also develop a mild fever, but these reactions are minor and temporary. Serious side effects such as severe allergic reactions can occur, but are extremely rare, and occurs in less than once per million doses of vaccines. On the other hand, the diseases that vaccines fight pose serious threats. Diseases such as polio, diphtheria, measles, and whooping cough can lead to paralysis, pneumonia, choking, brain damage, heart problems, and even death in children who are not protected by immunization.[6,1,9]

Minimizing risks

The society depends on everyone working together to ensure that all of us can be safe. One of the ways each one of us can play our part is to make sure that our child gets the right vaccines at the right time. First, go to health care facility or provide to get child immunizations. Second, discuss with health care provider about ways of handling the minor side effects of vaccines such as mild fever and tenderness. Finally, ask and keep written records to help you keep track of child's immunizations.

How childhood immunization works

Childhood immunization helps the immune system build up resistance to disease. It works by giving children vaccines containing tiny amounts of viruses or bacteria that are dead, weakened, or purified components. The vaccines prompt the child's immune system to produce antibodies that will attack the virus or bacteria to prevent disease. The child's immune system stores the information about how to produce those particular antibodies, and responds if the child is exposed to that same virus or bacteria in the future.

In most countries; Nigeria, Canada and the USA inclusive, vaccines against the following diseases are considered routine; diphtheria, tetanus (lockjaw), pertusis (whooping cough), poliomyelitis, rubella (German measles), measles (red measles), mumps, hepatitis B and Haemophilus influenza type b disease. These vaccines except oral polio are given by needle injections, in common practice; hepatitis B vaccine is given alone. The other vaccines are given in combination, according to specific schedules that usually start when a child is two months old. Parents of young children are advised to see a doctor or public health nurse to make sure they are getting the right vaccine at the right time.

There are also vaccines to protect against varicella (chickenpox), influenza, and some forms of meningitis, but these are not given on a routine basis in most countries. Parents need to find out when these are right for their children.

Childhood immunization is a public health issues

Because of vaccines, these diseases are no longer common around the world. However, it is still pertinent to immunize especially children for the following reasons: A drop in immunization rates can allow rare infectious diseases to resurface. For example, a drop in pertusis (whooping cough) vaccinations in Britain in 1974 was followed by a whooping cough epidemic that killed 36 people in 1978. Diseases do not respect borders. People can carry vaccine-preventable diseases across natural and political boundaries and likely spread them to children who are not vaccinated. Some people can't have vaccines because of allergies or other reasons. An unvaccinated child with a vaccine-preventable disease is a threat to these people.

Children and immunization

Because they have received antibodies from their mother's blood system, babies are immune to many diseases when they are born. But this immunity wears off during the first year of life. That's why immunization programs, which help young bodies, build their own defenses against disease, should be started early and carried out faithfully.

Advice to parents

Immunizations are important. The eight childhood diseases (measles, mumps, rubella, diphtheria, tetanus, pertusis, Haemophilus influenza type b, and polio) which are preventable by immunization, can and do cause crippling and, sometimes, death. These illnesses are serious and their complications can be terrible. With the exception of tetanus, these diseases are contagious. They can spread rapidly from child to child and from community to community. As long as children remain unprotected against them, serious outbreaks of disease - even epidemics - can occur.

Is important for parents to understand what protection vaccines give and what risks vaccines create for their children. Generally, vaccines are among safest and most effective medicines. Like other medicines, however, vaccines can cause side effects. These are usually mild - a slight fever, a sore arm, a mild rash - and don't last long, but can be rarely more serious. If a child that received vaccine gets sick and visit a doctor, hospital, or clinic during the 4 weeks after the immunization, this should be reported to the office or clinic where the vaccine was received. The overwhelming majority of medical experts believe that the benefits of complete immunization far outweigh the risks. The Public Health Service strongly recommends that all healthy children be immunized against all of the vaccine-preventable childhood diseases. State laws require that children must be immunized before being allowed to enter school, with some exceptions.

Risks of vaccines

Interviewed 13 parents who discussed their view of childhood[10] diseases and immunization and the risks-benefits analysis occurring between the two. All parents identified the risk of side effects as reason for choosing not to not immunize. Vaccines can cause side effects, like any other medicine. Mostly these are mild "local" reactions such as tenderness, redness or swelling where the shot is given, or a mild

fever. They happen in up to 1 child out of 4 with most childhood vaccines. They appear soon after the vaccine is given and go away within a day or two. More severe reactions can also occur, but this happens much less often. Some of these reactions are so uncommon that experts can't tell whether they are caused by vaccines or not.

Among the most serious reactions to vaccines are severe allergic reactions to a substance in a vaccine. These reactions happen very rarely -less than once in a million injections, usually very soon after vaccine intake or injection. Doctors, health workers or clinic staffs are trained to deal with them. The risk of any vaccine causing serious harm, or death, is extremely small. Getting a disease is much more likely to harm a child than getting a vaccine. Other Reactions: The following conditions have been associated with routine childhood vaccines. By "associated" we mean that they appear more often in children who have been recently vaccinated than in those who have not. An association doesn't prove that a vaccine caused a reaction, but does mean it is probable.

Vaccine adverse events

Adverse events following immunization (AEFI) has many myths around it purported to be caused by vaccines. Vaccines like all other drugs and medicines have adverse affects most of which are local reactions, irritations and pain that are local, transient and self limited. Rare, but serious adverse events blame of vaccines includes the view that oral rotavirus vaccine leads to intussusceptions and/or oral polio vaccine do cause paralytic poliomyelitis.

Unfoundedly "vaccines have been blamed for supposed relationships with a number of chronic conditions for which aetiologies remain unknown.[11] Allegations of occurrences as neurologic disorders diabetes mellitus and mental illness associated with hepatitis B. Vaccine Autism is linked to mums, measles and rubella (MMR) vaccines and convulsions or ceasures with measles vaccine are all scientifically baseless.[12] Researchers looked for measles virus in the guts of 25 children with both autism and gastrointestinal disorders, and another 13 children with the same gastrointestinal disorders but no autism. The virus was detected in one child from each group. This study provides strong evidence against association of autism with persistent measles virus RNA in the gastrointestinal tract or with measles, mumps and rubella (MMR) vaccine exposure.

Underpinning and firing the occurrence of "polio controversy" in Nigeria were mere suspicious and speculations that, polio vaccine is a western (American) design and strategy to shrewdly or craftily introduce residual contraception in children to reduce Nigerian population or induce future sterility or infertility. Ironically, virtually all drugs or medicines, nutritional supplements and health products are directly or indirectly discovered, manufactured and marketed by the same west and the same Nigerians gullibly consume these products. Obviously, expensive vaccines and delivery methods need not be used to achieve such purported mischief against Nigerians.

Vaccines under development

Numerous new vaccines with major potential for improving health in developing countries are in the research and development pipeline.[6] They include vaccines for rotavirus diarrhea, which kills 300,000 to 600, 000 children under age five every year; human papillomavirus, a leading cause of cervical cancer, which afflicts some 500,000 women each year, 80% of them in developing countries; and pneumococcal disease, which causes a large fraction of the world's approximately two million annual deaths from childhood pneumonia. In addition, a conjugate vaccine now in development should be much more effective against Group A meningococcal disease (Men A), a frequently fatal from of meningitis that causes recurring epidemics in a number of countries in sub-Saharan Africa. Several of these vaccines- those against rotavirus, pneumococcal disease, and Men A- may be available in developing countries by 2008-2009.

Global immunization coverage

Coverage has greatly increased since WHO's Expanded Programme on Immunization began in 1974. In 2003, global DTP3 (three doses of the diphtheria- tetanus- pertusis combination vaccine) coverage was 78%- up from 20% in 1980. However, 27 million children worldwide were not reached by DTP3 in 2003, including 9.9million in South Asia and 9.6 million in sub-Saharan Africa. Those who miss out on routine vaccination programmes tend to be people living in remote locations, urban slums and borders areas. They also include indigenous groups, displaced populations, those lacking access to vaccination because of various social barriers, those lacking awareness of motivation to be vaccinated and those who refuse. An estimated 2.1 million people around the world died in 2002 of diseases preventable by widely used vaccines. This toll included 1.4 million children under the age of five. Among these childhood deaths, over 500,000 were caused by measles; nearly 400,000 by Hib; nearly 300,000 by pertusis; and 180,000 by neonatal tetanus.

Since the Global Poliomyelitis Eradication Initiative was launched in 1988, the annual incidence of poliomyelitis world-wide has dropped by over 99%, from an estimated 350,000 to 520 reported cases in 2001.The Americas region was certified polio-free in 1994, the Western Pacific region in 2000, and since 2001 the European region (free of reported cases of indigenous poliomyelitis now for three years). The world is on track to be declared polio free in 2005. To achieve this historic event, the massive, accelerated polio eradication effort must continue in the remaining countries. The overall goal of the effort remains the same: certification of the global eradication of the virus by the year 2005. For Africa, polio eradication activities are clearly supportive of the ideals expressed in the African Red Cross and Red Crescent Health Initiative 2010.[13] One plausible explanation for the declining immunization coverage rate is vaccine unavailability. Ensuring a sustained, uninterrupted supply of vaccines to health facilities is mandatory to increase coverage. This standard is yet to be achieved in Nigeria as a country.

Empirical review

Immunization information is essential for parents

All parents and patients should be informed about the risks and benefits of preventive and therapeutic procedures, including vaccination.[1] Legal and ethical requirements for informed consent make this more compelling. The bedrock of right decision is right information. Lack of information and misinformation equally allows misconception, myths and misperception to thrive. These, not only lead to wrong choices, but sometimes dangerous decisions.

"Vaccine myths are dangerous because they can lead to the perception that vaccines are unsafe. Perception matter because they influence behavior and concerns about safety can erode confidence in vaccines and cause some parents to refuse to have their children vaccinated".[11] Refusal of immunization now, is preparation for infection and even epidemics later. Where too many parents refuse vaccination, this can lead to re-emergence of infectious diseases that have been virtually eliminated. The fact remains that, immunization

levels in a community is inversely proportional to incidence of vaccine preventable disease (VPD). Information parents need on immunization broadly span; general immunization education, immunization activity specific information as well as continuous immunizations information, education and counseling (IEC).[14]

Benefits of immunization

In a study of Beliefs about Immunization[15] and Children's Health among Childbearing Mothers in Nepal reported; When asked "Why did you get your child (ren) immunized?" 78.9% of the subjects answered with a response indicating "To prevent my children from getting diseases."Additionally, 11.9% of the mothers responded with a statement worded such as follows, "I had my children immunized to keep them healthy and full of immunity power," while 5.9% indicated that immunization was important to "help eliminate any concerns about communicable diseases." In response to the final open-ended question, "What is the biggest barrier to immunizing your child (ren)?," 32.5% of the sample stated that there were "no barriers to immunization," 31.6% of the sample noted that "lack of knowledge about immunization" was a significant barrier, and 11.1% of the sample indicated that "lack of transportation" was the biggest barrier to getting their children immunized.

Vaccines- which protect against disease by inducing- are widely and routinely administered around the world based on the common-sense principle that it is better to keep people from falling ill than to treat them once they are ill. Suffering, disability and death are avoided. Immunization averted about two million deaths in 2002. In addition, contagion is reduced, strain on health-care systems is eased, and money is frequently saved that can be used for other health services. Immunizations have reduced childhood vaccine preventable disease incidence by 98–100%. Continued vaccine preventable disease control depends on high immunization coverage.[5]

Immunization is a proven tool for controlling and even eradicating disease. An immunization campaign carried out by the World Health Organization (WHO) from 1967 to 1977 eradicated the natural occurrence of smallpox. When the programme began, the disease still threatens 60% of the world's population and killed every fourth victims. Eradication of poliomyelitis is within reach. Since the launch by WHO and its partners of Global Polio Eradication Initiative in 1988, infections have fallen by 99% and some five million people escaped paralysis. Between 1999 and 2003, measles deaths dropped worldwide by almost 40% and some regions have set a target of eliminating the disease. Maternal and neonatal tetanus will soon be eliminated in 14 of 57 high-risk countries.

New vaccines also have been introduced with significant results, including the first vaccine to help prevent liver cancer, hepatitis B vaccine, which is now routinely given to infants in 77% of WHO's Members States. Rapid progress in the development of new vaccines means protection will be available in the near future against a wider range of serious infectious disease.

Common immunization myths and misconceptions

In absolute terms vaccines may not be 100% safe, "severe allergic reactions result at rate of 1 in 100,000 doses of measles vaccine" two to four cases of vaccine associated paralytic polio have been reported for every one (1) million children receiving oral polio vaccine.[6] Hence, misconceptions of vaccination risks are extremely out of proportion to its safety. Findings of studies on vaccine safety reveal these misgivings. In a national (USA) telephone survey [14]found out that, 23% of parents thought that children receive more immunization than is good for them and 25% thought child's immune system can be weakened as a result of too many immunizations. 87% of parents see immunization as extremely important to keep their children healthy.

"An ounce of prevention: communicating the benefits and risks of vaccines to parents" interactive symposium poll of physicians in attendance showed; 40% believed that children receive more immunization than is good for them and 12% are not sure if too many immunization could weaken the immune system.[11]

Immunization: what do parent know?

The acceptance of vaccination services is dependent not only on provision of these services but also on other factors including knowledge and attitude of mothers, density of health workers, accessibility to vaccination clinics and availability of safe needles and syringes. In a study to ascertain parent's knowledge about vaccines, 87% of parents see immunization as essential to keep their children healthy.[14] They further observed that parents cited children's health care providers as their most useful source of information about immunization. Therefore, physicians, nurses and other health workers can significantly influence the decisions that parents make about vaccines.[11]

A visual tool was used in two communities Chad raise parents understanding of the benefits of immunization.[16] The instrument was administered by social workers and vaccinators at separate timing in relation to national immunization days (NIDs). Tools administered by social workers two weeks before NIDs was found to influence parents awareness more than those administered by vaccinators during NIDs. However, parent's awareness rose significantly in both communities and a link was observed between parent's awareness and children who missed immunization in both communities. A comparative study of mother's knowledge of children immunization before and after mass media in Egypt by El-Shazly MK [17] made up of study groups I;250 mothers not exposed to mass media, group II;150 exposed to mass media and group III; 100 primigravida exposed to mass media. All attended the same clinic for vaccination their children.

The mean score of knowledge increased with higher levels of education in groups I, II and III. The group with unsatisfactory knowledge had the highest percentage of completion of immunization in both groups I and II (62.9% and 100% respectively). Mothers with satisfactory knowledge among those completing the schedule were significantly higher in group II 87.9%) than in group I(46.2%). In group II, 73.5% of mothers had very good knowledge and completed the schedule compared to 60% in group I. Knowledge attitude and practice (KAP) survey on immunization practices were conducted in 12 of the 159 counties in Guangxi and Gansu provinces of china in July 1997. The results indicated that, the level of immunization knowledge among parents was positively associated with attitudes and practices of immunization. Immunization coverage was 89.3% in the highest stratum service areas. Low coverage was[17] associated with number of immunization service sessions per year, the fee for immunization services and health insurance for immunization services.[18]

Studied school personnel involved in the review of student's immunization status to determine whether, personnel training, immunization related knowledge, attitudes and beliefs, use of alternative medicine and sources of vaccines information were associated with vaccination status of children.[19] A child attending a school with a respondent who was a nurse was significantly less likely to be having an exemption than a child attending a school with

a respondent who was not a nurse (95%). The majority of respondents believed that children (95.6%) and the community (96.1%) benefit when children are vaccinated.

Studied children[5] recruited from 112 elementary schools in Colorado, Massachusetts, Missouri, and Washington. Surveys administered to the parents, asked about views on registries and perceived utility and safety of vaccines. Fewer than 10% of parents were aware of immunization registries in their communities. Among parents aware of registries, exempt children were more likely to be enrolled (65.0%) than vaccinated children (26.5%) (p value=0.01). A substantial proportion of parents of exempt children support immunization registries, particularly if registries offer choice for participation. Few parents of vaccinated (6.8%) and exempt children (6.7%) were aware of laws authorizing immunization registries. Parental support for registries was relatively high. Parental support for immunization registries may increase with greater parental awareness of the risks of vaccine preventable diseases and utility of vaccination.

A cross sectional study conducted by[20] in the two districts of North Bengal (Darjeeling and Jalpaiguri) India; December 2006 - March 2008.Showed"the parents are illiterate and are not serious about keeping the immunization card. The knowledge of the parents about immunization is very poor and the literacy of the parents is also poor". Furthermore, the study indicated that the knowledge about immunization is directly related to education. Parents with higher education got the higher score, the illiterate parents failed to achieve higher scores like 3 and 4. Father with class VIII and above education achieved the highest score. More number of mother with class VIII and above education achieved highest score.

Sources of immunization information

Reported in a qualitative study[21] of Parental perceptions of barriers to childhood Immunization, Parents who were interviewed at clinic sites reported a broader range of sources for information about immunizations than parents who received immunizations from private providers. 'The clinic' and 'clinic nurses' were the primary sources of information about the timing and potential side effects of immunizations for public health clinic patients. Family members involved with the medical professions were also mentioned: mothers and sisters who were or had been nurses and one baby's father who 'graduated from the health professions' provided information about immunizations. The media were also identified as sources of information relating to childhood immunization. Specific radio channels were identified as having broadcasted the importance of and locations for childhood immunizations. Magazine articles were also mentioned as sources of information. One woman carried an immunization calendar that she had clipped from a popular women's magazine.

On cost they reported "Cost of immunization was not a universal problem. Participants who were recruited from health department clinic settings reported that the vaccines given in the clinic cost only a few dollars and this was not a barrier to immunization. For parents who had their children immunized in a private setting, cost was a potential barrier."

Methods and material

Sample

The sample is made up of six hundred (600) (male and female) parents having child aged five (5) years and below, who must be residing in Maiduguri. The sample is 1:80 of parents to approximate 200,000 children in Maiduguri area. The approximate population from which the sample is drawn was about 50,000 parents.

Eligibility criteria

Inclusion Criteria: Adult male and female parents residing in Maiduguri having children aged 5 years and below at last birth day. Exclusion criteria: All parents that do not have child less than 5 years at the time of sampling and data collection. Temporary or short term visitors' e.g parents on holiday in Maiduguri or in transit.

Sampling technique

Clustering of ward units in Maiduguri Metropolitan and Jere Local Government of Maiduguri area was done. House-holds were then systematically sampled while one out of eighty (1:80) individual adult male or female parents met in these premises filled in the questionnaires or were interviewed based on literacy levels. Jere and Maiduguri Metropolitan wards were clustered out of and five wards (5) were chosen by raffle without replacement. Three hundred (300) households were then systematically selected from the proportionate allocation of 50 households to each ward. Six hundred (600) parents met within the randomly sampled households constitute respondents for the study[22] Used House-hold survey to asses' health needs and help seeking behavior of elderly Nigerians[23] also surveyed households to study Illness behaviour among the Kambari of Niger state, Nigeria.

Instrument for data collection

The instrument or tool for data collection is modified Likert type Gains of Immunization Rating List (GIRL).GIRL was developed from intensive review of relevant WHO, CDC and AAP publications that reflects the benefits of child immunization. English and translated Hausa versions were used.

The questionnaires assessed socio-demographic characteristics of the parent (such as ethnicity and educational level).Items on the list are dimensions of benefits of child immunization covering; child health, intellectual/academic, socio-economic, and family/community benefits of child immunization. Each item on the list is rated (1-4) strongly agree, agree, disagree and strongly disagree. Parent's awareness towards the benefit of child immunization or not are major categories or dimensions measured by Gains of Immunization Rating List (GIRL) the tool.

The reliability and validity of the instrument was established by cross criticism and cross fertilization of ideas by professional health care providers voluntarily recruited.

Procedure for data collection

The survey was conducted as a community-based cross sectional descriptive survey.Households were systematically followed within selected wards by researcher and assistants for a period of four months (February to May 2009) which fell within and around periods of National Immunization Plus Days (NIPDs) activities.

The rating scale (GIRL) is filled upfront by or with parents met in the households after debriefing and due consents were obtained. One out of eighty (1:80) adult male or female parents met in these premises was individual samples who filled in the questionnaires or interviewed based on literacy levels. Five wards (5), Three hundred (300) households and six hundred (600) parents are randomly sampled for the study. The researcher as coordinator worked with two (2) research supervisors and four (4) assistants in each ward chosen.

Data analysis

The ordinal data obtained was analyzed using SPSS Version 15.0.**Ho** were tested using chi (x^2) square at 0.05 confidence interval and (n-1) degree of freedom to ascertain awareness of immunization benefits and sources of immunization information. Parent's awareness towards the benefit of child immunization or not, sources of immunization information and socio-demographic characteristics of parents being the major categories or dimensions measured by Gains of Immunization Rating List (GIRL) the tool, were analyzed. Tables of frequency were generated for categorical and nominal data.

Results

Ways of increasing acceptance of child immunization in varied opinions of 128(28.96%) parents

i. Compulsory immunization certification by legislation.

ii. Demand for full immunization certificate as personal documents.

iii. Worship place long term and strategic orientation of the Nigerian population.

iv. Mass campaigns for immunizations at special festivals (sallah, Christmas etc).

v. Special outreach, projects and education on paternal roles in family and child health.

Description of results

Socio-demographic Characteristics

Table 2A Shows that, majority of respondents falls between ages of 30-34years 202(45.70%) ;followed by 35 years and above 102(23.08%).while 15-19 years are 30(6.69%);20-24 years are 46(10.41%) and 25-29 years are 62(14.02%)respectively. Overall, female are 254(57.47%) with highest age interval of 30-34 years 116(26.24) and male made up 188(42.53%) with modal age gap of 30-34 years 86(19.46%).

Table 2B Indicates majority of respondents are married 355(80.31%) made up of female 207(46.83%) and148 (33.48) male. Single are 18(4.07%), widow (ers) 27(6.11%) and divorced are 42(9.51%).

Table 2C shows 234(52.94%) parents are having 5-9 children of these female are 156(35.29%) and male 78(17.65), 147(33.26%) parents have 1-4 children and 61 about (14.00%) of responding parents had 10 or more children.

Table 2D Only 156(35.29%) Parents accepted to have fully immunized their children of which 94(21.27%) are female and 62(14.03) are male. The remaining 286(64.71%) parents immunized their child in part or not at all.

Table 2E Larger number of parents had GCE O level 170(38.46%) of this 100(22.62%) are female and 70(15.84%) are male. Other qualifications are diploma and NCE 128(28.96%), degree and HND 87(19.68%) those who had non-formal or no education at all are 57(12.90%).

Table 2F Unemployed parents are 175(39.60%) of this 142(32.13%) are women and only 33(7.47%) are men. Men employed as Skilled workers are 19(4.30%) and women 14(3.17%), while professional category workers among parents are 6(1.36%) men and 5(1.13%) women. Approximate of 213(48.00%) parents are self employed traders and artisans.

Table 2 Socio-demographic characteristics of parents

Variables	N (%)		Total
a) Age group (years)	**M**	**F**	**Total**
15-19	13(2.94)	17(3.85)	30(6.79)
20-24	20(4.53)	26(5.88)	46(10.41)
25-29	26(5.88)	36(8.14)	62(14.02)
30-34	86(19.46)	116(26.24)	202(45.70
>35	43(9.73)	59(13.35)	102(23.08
Total	**188(42.53)**	**254(57.47)**	**442(100)**
b) Marital status			
Married	148(33.48)	207(46.83)	355(80.31)
Single	8(1.81)	10(2.26)	18(4.07)
Widow(er)	12(2.71)	15(3.40)	27(6.11)
Divorced	20(4.53)	22(4.98)	42(9.51)
Total	**188(42.53)**	**254 (57.47)**	**442(100)**
c) Number of children			
4-Jan	52(11.76)	95(21.50)	147(33.26)
9-May	78 (17.65)	156 (35.29)	234(52.94)
>10	58 (13.12)	3 (0.68)	61 (13.80)
Total	188(42.53)	254 (57.47)	442(100)
d) Child fully immunized			
Yes	62(14.03)	94(21.27)	156(35.29)
No	126(28.51)	160(36.20)	286(64.71)
Total	**188(42.53)**	**254(57.47)**	**442(100)**
(e) Level of education			
GCE O Level	70(15.84)	100(22.62)	170(38.46)
Diploma/NCE	38(8.60)	90(20.36)	128(28.96)
Degree/HND	62(14.02)	25(5.66)	87(19.68)
Others/ None	18(4.07)	39(8.83)	57(12.90)
Total	**188(42.53)**	**254(57.47)**	**442(100)**
(f) Occupation			
Housewife/unemployed	33 (7.47)	142(32.13)	175(39.60)
Trader	61(13.80)	52(11.76)	113(25.56)
Artisan	67(15.16)	33(7.47)	**100(22.63)**
Skilled workers	19(4.30)	14(3.17)	33(7.47)
Professionals	6(1.36)	5(1.13)	11(2.49
Others	4(0.90)	8(1.81)	12(2.71)
Total	**188(42.53)**	**254(57.47)**	**442(100)**

Benefits of child immunization

Table 3 Values of X^2 for each dimension of benefit measured falls between75.919 to 86.760. Since these computed values are all

greater than the reference value of X^2(7.512) at 3df at 0.05 level of significance. The Ho: Parents are not significantly aware towards the benefits of child immunization is rejected to conclude that; parents are significantly aware of the benefit of child immunization. The most valued benefit is that immunization Makes Children look and live healthier 86.760 while vaccines being cheaper than treatment X^2 (75.919) is the least.

Table 3 Agreement with benefits of child immunization among 442 parents No. (%)

Benefits of child immunization	SA(4)	A(3)	D(2)	SDA(1)	X^2
Increases child survival	149(33.70)	159(36.00)	47(10.60)	87(19.70)	76.19
Keep children from falling ill often	149(33.70)	162(36.70)	48(10.90)	83(18.80)	79.611
Reduces cases of deformity	146(33.00)	165(37.30)	44(10.00)	87(19.70)	83.303
Makes Children look &live healthier	153(34.60)	163(36.90)	47(10.60)	79(17.90)	86.76
Reduces disease spread.	148(33.50)	162(36.70)	45(10.20)	87(19.70)	80.552
Makes child grow normal	151(34.20)	162(36.70)	47(10.60)	82(18.60)	82.688
Reduces hospital attendance	150(33.90)	159(36.00)	48(10.90)	85(19.20)	76.643
Helps healthful adulthood	146(33.00)	164(37.10)	50(11.30)	82(18.60)	77.783
Increases school attendance	146(33.00)	164(37.10)	46(10.40)	86(19.50)	80.389
Saves parents useful time	148(33.50)	165(37.30)	47(10.60)	82(18.60)	83.448
Keeps parent focused at work	147(33.30)	160(36.20)	49(11.10)	86(19.50)	73.891
Saves family money &resources	146(33.00)	164(37.10)	50(11.30)	82(18.60)	77.783
Improves child's intelligence	144(32.60)	166(37.60)	48(10.90)	84(19.00)	79.738
Reduce cases of disability	150(33.90)	164(37.10)	48(10.90)	80(18.10)	83.792
Reduces want of social assistance	146(33.00)	163(36.90)	47(10.60)	86(19.50)	78.271
Increases neighborhood well-being	147(33.30)	166(37.60)	48(10.90)	81(18.30)	83.158
It costs less than treatment	147(33.30)	161(36.40)	48(10.90)	86(19.50)	75.919
Is safer than treatment	146(33.00)	167(37.80)	47(10.60)	82(18.60)	84.136
Immunization is readily available	146(33.00)	165(37.30)	46(10.40)	85(19.20)	81.819

Dangers of lack of child immunization

Table 4 The calculated values X^2 for parents awareness of various dangers associated with lack of child immunization are all more than X^2(7.512) at 3df at 0.05 level of significance; Stress, fear and tension for parents X270.923 the least while, highest is; High chances of childhood death X^2(81.059). The precise values are; Blindness and physical deformation X^2(72.914); Mental and intellectual disability X^2((78.072); Frequent child sicknesses X^2(80.154); High chances of childhood death X^2(81.059); Frequent child absence from school X^2(80.516); Disturbance of parental peace X^2(77.005); Stress, fear and tension for parents X^2(70.923) and Waste of needed money and time X^2(78.090). All the risks of lack child immunization are reasonably perceived by parents, since all the computed values are greater than statistical standard value of X^2(7.512) at 3df at 0.05 level of significance. The Ho: There is no significant awareness of the risks of lack of child immunization among parents is therefore rejected.

Table 4 Agreement with risks of lack of child immunization among 442 parents No. (%)

Dangers of lack of child immunization?	SA(4)	A(3)	DA(2)	SD(1)	X^2
Blindness and physical deformation	149(33.70)	157(35.50)	48(10.90)	88(19.90)	72.914
Mental and intellectual disability	147(33.30)	163(36.90)	49(11.10)	83(18.80)	78.072
Frequent child sicknesses	147(33.30)	164(37.10)	48(10.90)	83(18.80)	80.154
High chances of childhood death	147(33.30)	166(37.60)	52(11.80)	77(17.40)	81.059
Frequent child absence from school	148(33.50)	163(36.90)	47(10.60)	84(19.00)	80.516
Disturbance of parental peace	144(32.60)	165(37.30)	50(11.30)	83(18.80)	77.005
Stress, fear and tension for parents	144(32.60)	162(36.70)	53(12.00)	83(18.80)	70.923
Waste of needed money and time	135(30.50)	173(39.10)	54(12.20)	80(18.10)	78.09

Information sources on child immunization

Table 5 The values of X^2 computed for each source are all up to or more than X^2(9.023) being that these are above X^2(7.512) at 3df at 0.05 level of significance, indicating that these are all significant sources of information on child immunizations to parents. The Ho: Parents do not have significant access to information on child immunization activities is rejected in favour of parents having

significant access to sources of information on child immunization. However, Printed immunization papers, pamphlet and posters being the highest rated source X^2(117.548) may be accounted for by massive use of IEC materials in during and around the period of NIPDs in Maiduguri. Worship place announcement is the least accepted as a source X^2(9.023).

Table 5 Information sources on child immunization to the 442 parents No (%)

Sources of immunization information	SA(4)	A(3)	DA(2)	SD(1)	X^2
Mass media (radio and television)	183(41.4)	140(31.7)	77(17.40)	42(9.50)	108.063
Immunization pamphlets and posters	209(47.3)	82(18.60)	72(16.30)	79(17.90)	117.548
Family members , friends and neighbors	143(32.4)	129(29.20)	102(23.10)	68(15.40)	29.656
Religious and community group.	149(33.7)	120(27.10)	100(22.60)	73(16.50)	27.955
Health workers (Nurses, CHEW, Dr.etc)	175(39.6)	125(28.30)	70(15.80)	72(16.30)	67.81
Magazines and Newspapers	171(38.7)	97(21.90)	88(19.90)	86(19.50)	44.787
Worship place announcements.	132(29.9)	119(26.90)	93(21.00)	98(22.20)	9.023
Neighborhood announcers(Town criers)	180(40.7)	140(31.70)	64(14.50)	58(13.10)	96.1

Ways of increasing acceptance of child immunization

Collectively 128(28.96%) parents suggested the following ways to enhance acceptance of child immunization; Compulsory immunization certification by legislation, Demand for full immunization certificate as personal documents; Worship place long term and strategic orientation of the Nigerian population; Mass campaigns for immunizations at special festivals (sallah, Christmas etc) and Special outreach, projects and education on paternal roles in family and child health.

Discussion

The findings of the study is discussed in the context of concepts of immunization; its risks and benefits relating it to literatures and empirical findings on the child health and other benefits of immunization.

Determinants of parent's awareness

The mean age of parents is 33 years 202(45.70%) of 442(100%), over 80% of them are married. Rosentock et al.[3] 1990 Health Belief Model identified socio-demographic factor as a major determinant of the perception of both benefits and threats of health action and health situation respectively. Most parents are adults and stably married this could therefore have influenced their positive awareness of the beneficial effects of child immunization.

Over 50% of parent had over 5 children, the cultural value for children in Borno, low educational levels and lack of employment has been associated with larger family size, in communities. Only about 156(35%) of parents fully immunized their children15, found out that Mothers mean score of knowledge of immunization increased with levels of education[18] Surveyed knowledge attitude and practices in immunization in two Chinese provinces and concluded that immunization knowledge among parents is positively related to knowledge, attitude and practice of child immunization.

Poor immunization record keeping by parents is also identified to be associated with illiteracy by 18Manna et al, 2009 in India. These might also be a factor in Maiduguri since over 50% of parents had 'O' level or no education at all and may not be a direct fall out of lack of awareness and information on vaccination and its associated gains. Since both awareness of information are rated high by respondents all greater than p=0.05. Identified that parents view risks and side effect as reason for choosing not to immunize[10]

Benefits of immunization

On the benefits of immunization[6,9] all concur that immunization is highly beneficial to every child and community and its benefits far outweigh dangers associated with it in forms of adverse reactions and side effects. It was found out in this study that all parents have reasonable knowledge of the importance of child immunization for their children. The various dimensions of child immunization benefits measured, had significant P values of not less than 73.891.

Matsuda[15] pointed out that 78.9% Childbearing Mothers in Nepal immunize their children to prevent them from getting diseases. The finding of this study showed parents awareness of child health advantages of vaccination as; Increases child survival P(76.190), Keeps children from falling ill often P(79.611), Reduces cases of deformity P(83.303), Makes Children look and live healthier lives P(86.760), Reduces disease spread P(80.552) all P are significant. Generally, parents in Maiduguri either agree or strongly agree that they are aware of the gains or advantages of immunization for their children.[17] Linkins et al.[5] pointed out that immunization have reduced childhood death by 98%-100%. Continued vaccine preventable disease control depends on high immunization coverage. Identified that 87% of parents see immunization as essential to keep children healthy in a National (USA) telephone survey.

In this study, dimensions of benefits covered span across; increased child survival, increased child healthier look, reduced spread of disease, normal growth, reduced hospitalization, saves parents time and other responses, costs less than treatment and to some extent is readily available. Overall, understand the benefits of child immunization in Maiduguri.

Awareness of risks of lack of child immunization

Immunization remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infectious diseases. Over two million deaths are delayed through immunization each year worldwide[6] Implied dangers of not immunizing especially children in this statement are frequent sickness and early and increased death rate. In the result of this study parents perceives the risks of the lack of protecting children with vaccines well.

Dimensions of risks and associated significant P values of parents awareness are; Blindness and physical deformation 72.914; Mental

and intellectual disability 78.072; Frequent child sicknesses 80.154; High chances of childhood death 81.059; Frequent child absence from school 80.516; Disturbance of parental peace 77.005; Stress, fear and tension for parents 70.923; and Waste of needed money and time 78.090.

Sources of information on child immunization

In[21] a qualitative exploration of sources of information on child immunization to parents and stated that clinic staff and nurses gave detail knowledge on immunization benefits and risks to parent. This study however did a quantitative survey of parents basic source of information among commonly available persons and media of dissemination of immunization information to parents in Maiduguri, all of which were accepted as useful source.

Print and electronic media, IEC, material, family and friends, religious and community group, health workers, local announcements are all accepted sources. Health workers were indicated by about 175(40%) of parents as source. However the depths of impaction of knowledge have not been explored. CDC documents showed that 34% of states in U.S have laws that require parents to immunize children with various forms or different types of vaccine 128(28.96%) parents suggested in this study that, legislation for compulsory immunization, full immunization certification, long term strategic education of parents and special projections. This there can be useful methods of educating parent on immunization.

Methods of parent education

All the media of mass information conveyance are accessible to parents in Maiduguri, proved by their having significant reach to them in this work. However, these may not be appropriate for in-depth education of parents especially fathers being busy bread winners by local values. Print and electronic media, IEC, material, family and friends, religious and community group, health workers, local announcements are all accepted sources, but not for thorough instruction on all aspects of immunization.

Implications for health planning and management

Having identified that parents are significantly aware of the benefits and risks of child immunization, there is the need to use these identified media of information sources for long term and strategic parents' education and counseling. The intensification of community education, mobilization and advocacy capitalizing on what parents know and the limit of or extent to which they are useful towards acceptance and use of child health services need to be done.

Suggestions

The following suggestions could be helpful

i. There is need for comparative teaching of parents especially fathers and media mobilization on benefits and risks and the gross gains of immunization over and above its dangers in Maiduguri.

ii. Community values such as religious and ethnic gatherings can be harnessed and as a strong means of creating awareness and in-depth knowledge on all matters that relate to health policy generation and participatory implementation in collaboration with individuals, families and community.

iii. The essence and standard of documentation and certification of child immunization among other health services needs to be explored for proper planning, implementation and effective use.

iv. Laws that compel parents to immunize their Children should be put in place or made.

v. The certification of complete immunization as personal documents like indigenization certificate, birth certificate could be valuable for ensuring child protection with vaccines.

vi. Inclusion of immunization certificate as requirement for school enrolment and access to public goods and services could be useful towards enhancing immunization compliance and coverage.

vii. Immunization acceptance and coverage should be continuously improved; the need for routine immunization cannot be over emphasized.

viii. To increase immunization acceptance and be made part of the community's common health practices, vaccines should be readily available in primary health care facilities more than periodic and supplemental campaigns.

Further study or research

i. Factors that determine acceptance of available immunization services and vaccines in Maiduguri and environ need to be explored.

ii. Hindrances and militating conditions against constant vaccine supply and accessibility to facility based routine and emergency immunization services in this community need to be identified.[22]

Summary

The study was undertaken to conduct a community based house hold survey of Parents' awareness of the benefits of child immunization in Maiduguri metropolitan City, Borno State, Nigeria. Massive supplemental immunization campaigns particularly targeting Polio plus other infectious diseases, Vitamin A deficiency and motivational extras, have been on-going in Nigeria especially the north for over a decade. Underpinning these specific and effective protection activities have been continuous ethno-religious controversy that seems to ensue from ignorance and misinformation of parents on the benefits of child immunization. The challenge that emerged therefore is to find out whether; Parents in Maiduguri have correct understanding of the benefits of child immunization?

The background of study area; the Metropolitan city of Maiduguri was moderately reviewed for clearer understanding of the scope of this research. The Epidemiological Triangle and Rosenstock and Becker's Health-Belief Model were used as frame work for the study. The premises of informed consent of parents as ethical and legal requirements for delivery of health services to children including immunization makes the assessment of parents' awareness towards the benefits of child immunization rationally sound and essential.[23]

When determined, the level of parents understanding could be a valuable tool for redesigning strategy for increasing the acceptance, utilization and coverage with immunization. Findings of this study can also be useful for general public health and child health care planning and delivery. Five sub-objectives were set and three Null hypotheses (Ho) were stated. Conceptual literatures reviewed covered child immunizations awareness, benefits, risks and sources of relevant

information to parents on child specific protective measures. Peer reviewed publications of researches on parents' perception, awareness; risks, education and sources of information on child immunization were also explored.

The sample is made up of six hundred (600) (male and female) parents having child aged five (5) years and below, who must be residents of Maiduguri. Settlement wards were clustered, Households were then systematically sampled while one out of eighty (1:80) individual adult male or female parents met in these premises filled in the questionnaires or were interviewed based on literacy levels.

The instrument for data collection is a modified Likert type Gains of Immunization Rating List (GIRL). Items on the list are dimensions of benefits of child immunization covering; child health, intellectual/ academic, socio-economic, and family/community benefits of child immunization. Each item on the list is rated (1-4) strongly agree, agree, disagree and strongly disagree. The survey was conducted as a community-based cross sectional descriptive survey of Households. The ordinal data obtained was analyzed using SPSS Version 15.0.Ho were tested using chi (X^2) square at 0.05 confidence interval and (n-1) degree of freedom. The generated Socio-demographic data is presented on simple tables of frequency and percentage, while other variables were tested using X^2 and presented as same. It was found out in this study that all parents have reasonable knowledge of the importance of child immunization for their children. The various dimensions of child immunization benefits measured, had significant P values of not less than 73.891.

Conclusion

Parents in Maiduguri are significantly aware of benefits of child immunization and the risks of its lack. Sources of immunization information used in Maiduguri seem to be adequate. However, there is need for further research to determine specific factors that impinge on immunization services and facility utilization and acceptance in Maiduguri. Close look into and harnessing of ways suggested by parents could be more promising for improving local utilization of immunization services.

Acknowledgements

None.

Conflict of interest

The author declares no conflict of interest.

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