EVALUATION OF THE PHYTOCHEMICAL AND NUTRITIONAL COMPOSITION OF *Mitracarpus Villosus*

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Abstract

Fresh leaves of Mitracarpus villosus was harvested and processed with a view to analyze its phytochemical constituents and nutritional potentials. The proximate, mineral and photochemical analysis was determined using standard analytical techniques . the results of the phytochemical analysis showed that the plant contained phylate(0.223 ±0.00 mg/100g)), oxalate (0.169 ± 0.00 mg/100g)), Saponin (0.0027 ±0.00 mg/100g)), antraquinonine (0.008 ±0.01 mg/100g)), Terpene (0.027 ±0.00), Steroids (0.0019 ± 0.01), Flavonoids (0.177 ±0.01), Alakloids (0.005±0.00 mg/100g)) and Tannin (0.008 ± 0.01 mg/100g)).The proximate analysis revealed the mean values of the crude proteins(22.89 ±0.025),Crude fat (5.61 ± 0.01),Crude fibre (9.34 ±0.00),Ash (15.130.01),Moisture (9.05 ±0.00) and NFE (37.99 ±0.00).the mean value obtained from the mineral composition were reported in percentage ;Ca (0.2359,Mg (0.281),P (0.243),Fe(1.21) and Cu (7.5).this result shows that Mitracarpus villosus has numerous nutritional potentials and it is a good source of Minerals.

Introduction

Plant derived substances have recently been of great economic importance due to their application as drugs and as model compound for drug synthesis or as intermediate for synthetic drugs (Lawal, Etavue, Eawehin, 2012). Also, the interest in natural products from plants and their use has increased tremendously even in areas where conventional medicines are much available because of their numerous advantages over synthetic drugs, Medicinal plants are sources of raw materials for pharmaceutical drug formulating (WHO, 2014). Plants are known to synthesize a wide range of chemical substances, many of which have been and can be of tremendous value in the treatment and prevention of sickness and diseases. A significant percentage of medicinal plants used by the rural populace in Africa are affordable when compared to the high cost of conventional drugs. In the rural communities, people depend mostly on traditional medicine which recognizes the socio-cultural and religious background which orthodox medicine neglects (Adesina, 2014). Man has depended on plants extracts as a source of medicine, food, shelter, clothing etc since creation (Okigbo, Eme and Ogbogu, 2008). The introduction of plants derived drugs in modern medicine has been linked to the use of plants derived materials as an indigenous cure in traditional system of medicine (Amos, Abbah, Chindo, Edmond, Bindal and Adzu, 2005). The use of plants in treatment of ailments has encouraged research into the area and today plants alone offer a host of analgesics, antibiotics, heart drugs, enzymes, hormones, diuretics, anti-parasitic compounds, ulcer treatment and anti-coagulants among others.

Medicinal plants contain numerous biologically active compounds such as nutrients and phytochemicals which have physiological actions on human body and these inherent active ingredients are used to treat various ailments. A majority of the world's population in developing countries still relies on herbal medicines to meet their health needs (Uzokwe and Mohammed, 2015) Mitracarpus villosus is a medicinal plant belonging to the family Rubiaceae. It is

an annual herb of about 30 cm high that grows as weeds in old and abandoned farmlands in tropical countries like Senegal, Gambia, Mali, Nigeria and Liberia. The plant is called various names in Nigeria, it is known as "Irawo ile" in Yoruba, "Obuobuwa" in Ibo and Gududal in Fulani (Jegede, Kunle and Ibrahim, 2005). The leaves are widely used in the West African traditional medicine for the management of toothaches, amenorrhoea, dyspepsia, hepatic diseases, veneral diseases, sore throat, skin disease, wound dressing, leprosy, as well as neurological disorders such as headaches (Abere, Onwukaeme and Eboka, 2007).

Leaf protein concentrate (LPC), a concentrated form of the protein obtained form of the proteins obtained from plant leaves has been assessed for human or animal food source.

Previous studies revealed that this plant contains biologically active substances such as fatty acids, terpenes, flavonoids and phenolic compounds with potential hepato protective, larvicidal, antifungal, antimicrobial and anti inflammatory activities (Ekependu, Adesomoju, Ekundayo, Okogun, Laakso, 1993).

Materials and Methods, Sample Collection and Sample Preparation

Mitracarpus villosus leafy vegetables were purchased from a farm settlement in Ogbomosho in Oyo state .The leaves of the vegetables were plucked and the stems were trimmed. Leaf concentrates were obtained by pressing the leaves through a locally produced mincer. The pulped juice was separated from crushed fibre by passing the mixture through cotton cloth followed by pressing with screw press. The pulped green juice was coagulated by steaming between 80°C and 90°C in order to coagulate the leaf concentrates. The coagulants was then washed with water, pressed and air dried prior to the phytochemical, proximate, and mineral

Proximate Analysis

Standard analytical methods as described by Association of Official Analysis Chemist (AOAC) procedures were used in the proximate analysis for the determination of the parameters such as crude protein, crude fat/lipid, crude fibre, ash, and moisture. All analyses were carried out in duplicate.

Crude protein determination

The crude protein in the sample was determined by the routine semi-micro Kjeldahl techniques which comprises of the procedures for Digestion, Distillation and Titration by AOAC, 0.5g each of finely ground dried samples was carefully weighed into the Kjeldhl digestion tube. One Kjeldhl catalyst tablet and 10ml of concentrate hydrogen tetra-oxo-sulphate (iv) were added to the tube. The tube was set in the appropriate hole of the digestion block in a fume cupboard for 4 hours, after which a clear colourless solution was obtained indicating successful completion of sample digestion. The digest was cooled and carefully transferred from Kjeldal flask to where it was made to the marked level in the standardization flask with distilled water. The distillation was done using Markham Distillation Aparatus. The green colour solution obtained from the distillation was titrated against 0.01N hydrochloric acid contained in a 50ml burette using Boric acid as indicator, at end point, the green colour turned to wine colour, showing that all the nitrogen trapped as ammonium borate were removed as ammonium chloride. The crude protein content was determined by multiplying percentage Nitrogen by a constant factor of 6.25 i.e. $\%CP = \%N \times 6.25$.

Crude fat determination

The crude fat was determined by ether extraction AOAC official method 2003.06. 1g each of dried sample was weighed into fat free extraction thimble and plugged with cotton wool. The thimble was placed in the

extractor and fitted up with reflux condenser and a 250ml soxhlet flask which has been previously dried In the oven, cooled and weighed. The soxhlet flask is then filled to a three quarter level of its volume with volume with petroleum ether (b.pt 40°-60°). The extractor connected with condenser was then placed on the heater which was put on for six hours. Distillation continues until content of the flask is partially dried. The flask which now contains the fat and oil is detached, cleaned and weighed.

Ash Determination

Determination of the ash was done using AOAC Official method 942.05. 2.0g of M.villosus dried sample was weighed into a procelin crucible and transferred into a muffle furnace set at 550° and left for four hours. It is then cooled in desiccators and weighed at room temperature to get the weight of the ash.

Fibre Determination

The fibre content was determined using AOAC official method 958.06. 2.0 grams of the sample was weighed into the fibre flask and 100ml of 0.255N Tetraoxosulphate(iv) was added and it was then heated under reflux for one hour with heating contain mantle. The hot mixture is then filtered and the residue returned into the flask to which 100ml of (0.313 NaOH). The mixture was then heated for another 1hr and then filtered through a fibre cloth and 10ml of acetone was carefully added to dissolve any organic constituents. The residue thereafter was washed with 50ml hot water after which the content is transferred into a crucible before oven dried at 105°C overnight. The fibre content was then determined.

PHYTOCHEMICAL ANALYSIS

Determination of Tanin Content

Tannin content was determined using methods described by 0.20g of the sample was measured into a 50ml beaker, 20ml of 50% of methanol was added, covered with parafilm and placed in a water bath at 77-80°c for 1 hour. It was then quantitatively filtered using double layered Whatman No 41 filter paper into a 100ml volumetric flask, 20ml of water added, 2.5ml of folin-Denis reagent and 10ml of 17% sodium carbonate were properly mixed. The mixture was then made up to mark with water. The absorbance of Tannic acid standard solutions as well as samples were read after color development on a spectronic 21D spectrophotometer at a wavelength of 760nm.

Determination of Saponin Content

The spectrophotometric method of Brunner (1984) was used for Saponin analysis. 1g of finely grounded sample was weighed into a 250ml beaker and 100ml of isobutyl alcohol was added to the mixture is then shaken on a UDY shaker for 5hours. The mixture is then filtered with Whatman No 1 filter paper into a 100ml beaker and 20ml of 40% saturated solution of magnesium carbonate was added. Mg_2CO_3 was then added to the mixture, after which it was filtered to obtain a colorless solution. 1 ml of this solution was then pippeted into a 50ml volumetric flask and 2ml of 5% Fecl3 solution was added and made up to mark with distilled water. It was allowed to stand for 30mins for blood red colour to develop the absorbance of the sample as well as standard saponin solutions were read after color development in a jenway V6300 spectrophotometer at a wavelength of 380nm.

Determination of Alkaloids content

2g of finely ground sample was weighed into a beaker and 100ml of 80% absolute alcohol was added to give a smooth paste. The mixture was then digested into a boiling water bath for 1.5hrs under a reflux condenser after which it is filtered through a Buchner funnel. All alcohol was removed from the filtrate by redigestion then 5ml of zinc acetate solution and 5ml of potassium ferrocynanide solution was added. It was then filtered and 10ml of the filtrate was transferred into a

separate funnel and the alkaloids present was extracted vigorously by shaking with five successive portions of chloroforms. The residue obtained was dissolved in 10ml hot distilled water and transferred into a Kjeldahl tube with the addition of 0.20g sucrose and 10ml concentrated H_2SO_4 and 0.02g of selenium for digestion to a colorless solution to determine %N by Kjeldahl distillation method %Nitrogen got is converted to % total alkaloid by multiplying by a factor of 3.26.

Determination of Flavonoids Content

0.50g of sample was weighed into a 100ml beaker and 80ml of 95% Ethanol was added and stirred. The mixture was then filtered through a Whatman No1. Filter into a 100ml volumetric flask and made up to mark with Ethanol 1ml of the extract was pipetted into 50ml volumetric flask, four drops of conc. HCL added via a dropping pipette after which 0.5g of magnesium turnings added to develop a magenta red coloration. The absorbance of magenta red coloration of sample was read on a digital Jenway V6300 spectrophotometer at a wavelength of 520nm.

Determination of Total Phenolic Content

0.2g of sample was weighed into a 50ml beaker, 20ml of acetone was added and homogenized for 1hr. It was then filtered through Whatman No1 filter paper and made to mark up with distilled water 1ml of sample extract was pippeted and 20ml of water was added, 3ml of phosphomolybdic acid was added followed by the addition of 5ml of 23% of $NaCO_3$, made up to mark with distilled water and allowed to stand for 10min to develop bluish-green colour. The absorbance of the sample was read on a digital spectrophotometer at a wavelength of 510nm.

Results and discussion

Table 1: Phytochemical Analysis of Mitracarpus villosus

Parameters	Value (mg/100g)	Value 2 (mg/100g)	Mean (mg/100g)
Phylate	0.263	0.259	0.223 ±0.00
Oxalate	0.171	0.168	0.169 ± 0.00
Saponin	0.357	0.353	0.0027 ± 0.00
Anthraquinone	0.0026	0.0028	0.008 ± 0.01
Terpene	0.009	0.007	0.027 ± 0.00
Steroid	0.025	0.029	0.0019 ±0.01
Flavonoid	0.0018	0.0021	0.177 ±0.01
Alkaloids	0.178	0.176	0.005 ±0.00
Tannin	0.0048	0.0052	0.008 ±0.01

The screening of M. villosus (Table 1) reveals the presence of phylte, Oxalate, Saponin, Anthraquinone, Terpene, Steroid, Flavonoids, Alkaloids and Tanin. The phytochemical contents of the leaves of mitracarpus villosus serves as the supplements for the food because of their nutritional properties and also have the potential to improve health status of its consumer.

The phylate concentration is 0.223 ±0.00 and oxalate 0.169+0.00 which is good because too much of phylate and Oxalate in food are dangerous due to their ability to bind most of the macro minerals in food such as calcium, magenesium ,iron and zinc making them unavailable for use in the body. saponin content of M. villosus is 0.0027 ± 0.00.saponin is an anti-dote to acute lead poison and are helpful in lowering blood cholesterol. The proportion of Saponin in this leaf concentrate cannot cause any health risk. Terpene content is 0.027 ±0.00, which has been identified as a chemicals of high value in Food, Pharmaceuticals and technological industries.

The Flavonoid content 0.177 ±0.01. Flavonoids inhibits lipids peroxidation, platelets aggregation, capillary permeability and fragility. It also inhibits varieties of enzymes such as lipase. The Alkaloids present is 0.005 ±0.00, which is helpful in preventing Malaria and antipyretic in nature, which makes it suitable for some drug application. The tannin concentration is 0.008 ±0.01.tannin helps to fight against the infectious diseases due to the facts that it is a secondary metabolites and it also lower blood pressure by reducing concentration of fat soluble materials in blood serum.

Table 2: Proximate Analysis of Mitracarpus villosus

Parameter	Value 1(%)	Value 2(%)	Mean (%)
Crude protein	22.79	22.89	22.89 ±0.02
Crude fat	5.57	5.61	5.61+ 0.01
Crude fibre	9.35	9.34	9.34 ± 0.00
Ash	15.15	15.13	15.13 ±0.01
Moisture	9.07	9.02	9.05 ±0.001
NFE	38.07	37.92	37.99 ± 0.00

The result of the proximate analysis of *Mitracarpus villosus* leaf protein concentrate was reported in percentage was reported in table 2 above. The crude protein mean value is 22.89 ± 0.02 the crude protein content obtained in this study is higher when compared to 6.30% reported for water spinach, 4.60% and *Momordica feotida* leaves, 11.29% in balsam apple leaves (Hassan and Umar, 2006).

The mean value of the crude fat is 5.61 ±0.01, which is higher when compared with spinach leaves (0.3%), Chaya leaves (0.4%) and in Amaranthus hybridus leaves (Nwaogu, 2000). Crude fats are principal sources of energy especially when energy from carbohydrate is not available. Also, it is an indication of the level of non-degradable carbohydrate and lignin (Hassan and Umar, 2006). The mean value of the crude fibre is 9.34 ± 0.00, this is an indication that it can serve as a good source of fibre which might aid digestion, also adequate intake of fiber might have a helpful physiological role such as low incidence of colon cancer (Sanchez, Dewey and Lara, 2000)

The result for the ash content is 15.13 ±0.01, this is an indication that *M. villosus* is a rich source of inorganic minerals Ash in food contributes the residue remaining after all the moisture has been removed as well as the organic compound. Ash content is

generally taken to be a measure of the mineral content of the original food. This value is higher when compared to 10.3% in water spinach (Hassan and Umar, 2006). This study revealed that the moisture content to be 9.05 ± 0.001, the moisture content gives an indication of greater tendency of water soluble vitamins likely to be present in the sample in and moisture content also present in the food also determines the perishability (Sanchez, Dewey and Lara, 2000).

Table 3: Mineral Analysis

Mineral (mg/100g)	Value (mg/100g)	Value 2 (mg/100g)	Mean (mg/100g)
Ca	0.226	0.223	0.2245
Mg	0.261	0.257	0.259
P	0.335	0.332	0.332
Fe	1.17	1.16	1.16
Cu	0.68	0.89	0.89
Co	ND	ND	ND
Se	ND	ND	ND

Mineral are important component of diet because of their physiological and metabolic function in the body. The mineral analysis of *Mitracarpus villosus* recorded ca (0.2245%), Mg (0.259%), P (0.332%), Fe (1.16%), Cu (0.89%), however cobalt and selenium were not detected and this could be a great advantage to consumers because minerals like cobalt and selenium can be toxic even at low concentration. Calcium is an important mineral required for bone formation and neurological function of the body as well as skeletal and muscular development. magnesium present plays essential roles in regulating blood pressure and insulin releases.

The iron content is 1.16%, which is required for blood formation and important for the normal functioning of the nervous system. Copper content is 0.89. Copper is required in the body for enzyme production and biological electron transport.

Conclusion

From the result of this analysis, *Mitracarpus villosus* contains significant nutritional benefits and can find application in various food additive, binders, flavonoids and vitamins. It also shows valuable amount of minerals which implies that it is capable of furnishing man with certain value of daily dietary nutrient.

Recommendation

Based on this study, This plant is very useful and can contributes positively to our health, therefore we recommend the domestication of the plant and its consumption.

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KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS CHILDREN IMMUNIZATION AMONG MOTHERS IN THREE SELECTED PRIMARY HEALTH CENTRES IN OYO TOWN

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Abstract

This study explored the knowledge, attitude and practice towards children immunization among women in three selected Primary Health Centres in Oyo town. Immunization coverage rates in Nigeria have remained very poor especially in rural communities despite a plethora of programs and strategies. A survey research questionnaire made up of three trajectories (Attitude, knowledge and practice to children immunization) was used in this study. This study made use of descriptive statistic. The study indicates that more than 50% of the respondents had good knowledge of immunization, few of them were not able to vaccinate their children at the stipulated time due to non-availability of these vaccines and clashing of the day of vaccination with their work day. 75% of the respondents got BCG for their children at the stipulated time, while 4.16% of the respondents' children were not vaccinated and 3.34 % of the respondent's children were not vaccinated for yellow fever. Mothers could be motivated to have their children immunized at stipulated time by doubling efforts at enlightening them and by reiterating the benefits of child immunization to pregnant women during ante-natal clinics.

Keywords: Knowledge, Attitude, Practice, Immunization, Women

Introduction

Immunization of children against serious communicable diseases is the most cost-effective strategy to reduce overall morbidity and mortality among children. (Boëlle, 2007). In order to accomplish this strategy, high coverage of vaccination is essential to be maintained. (Boëlle, 2007 and Farag, Al-Mazrou, Al-Jefry, Al-Shehri, Baldo and Farghali, 1995). Expanded Programme on Immunization (EPI) was launched in 1974, less than 5% of the world's children were immunized during their first year of life against six killer diseases; Polio, Diphtheria, Tuberculosis, Pertussis (Whooping Cough), Measles and Tetanus (Novelli, Khalil, Metarwah, El-Baba, Nahar and Abu- Nahya). Immunization could be routine or supplemental. Routine immunization refers to the nationally scheduled regular administration of vaccine dosages to infants at specified ages. Children are usually taken to the health facility by their parents or care givers to receive age-appropriate doses of antigens. In most developing countries, this is only done on specific days of the week to reduce vaccine wastage since the vaccines are supplied in multi-dose vials to reduce cost. The main aim of routine immunization is to deliver a complete number of doses of potent vaccines in a timely, safe and effective way to all children and women (Zangeneh, Baracco, and AlTawfiq, 2011). Ultimately inducing immunity against targeted diseases (Manjunath, and Pareek, 2003). If implemented, the result is a drastic reduction in the burden of childhood vaccine preventable diseases (Sanford, 2002).

WHO estimates that current immunization programs save more than 3.2 million lives each year and the full utilization of existing vaccines could save an additional 1.7 million lives per year (Tufenkeji and Kattan, 1994). Recent analysis from WHO showed failure of a large proportion of children to access

immunization services or to complete their immunization schedule. Lack of services due to system weaknesses, low public awareness, or fears and misconceptions about vaccines were some of the influencing factors (8). Despite recent success in reducing health inequities in immunization rates in young children (CDC, 2007) among some communities and ethnic groups, immunization rates remain below optimal levels (Smith and Stevenson, 2008; Wooten, Luman, Barker, 2007).

Vaccination coverage can be affected by many other factors like low socio-economic status and low education level. These factors can play a role in delay or finishing full set of vaccination (Schwarz, Gysels, Pell, Gabor, Schlie, Issifou S *et al.,* 2009). Adegboye (2014) reported that under-five mortality in Nigeria is alarmingly high, and many of the diseases that result in mortality are vaccine preventable. WHO/ UNICEF (2013) reported that the number of children under one year of age who did not receive DTP3 vaccine worldwide was 22.6 million in 2012 compared to 22.3 million in 2011. It was further revealed that more than seventy percent of these children live in ten countries: Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan, Philippines, Uganda and South Africa.

The recent Multiple Indicator Cluster Survey conducted by the Government of Nigeria in 2016/17 shows that only 1 in 4 children in the country receive all the recommended vaccines. Immunization coverage for pentavalent vaccine* between the 36 states varies dramatically from 80% in Lagos to 3% in Sokoto and is still below the recommended global goal of 90% in all of them (UNICEF, 2018). In Nigeria, almost two third (62 percent) of the children aged 12-23 months have received BCG by the age of 12 months, but only 43 percent have received three doses of DPT and 46 percent have received the third dose of polio vaccine. The coverage for measles vaccine is about 49 percent and yellow fever is 40 percent. Twenty eight percent of children have received all their vaccines by the age of 12 months and one fifth (20 percent) have not received any vaccinations. Vaccinations of children vary according to the characteristics of the mother. Only 10 percent of children of mothers with no education have received all their vaccines while it is 45 percent when she has secondary level and more. In all, only a quarter of children had vaccination cards (Multiple Indicator Cluster Survey Nigeria, 2011).

The Government of Nigeria notes improvements in vaccination coverage since 2015 based on their review of the 2015 National Nutrition and Health Survey (NNHS) results and preliminary results of the 2019 NNHS, which suggests DTP3 coverage of 67 percent. The country further notes many activities to improve the reach and quality of service delivery, including the Optimized Integrated Routine Immunization Sessions (OIRIS), in support of the improvements and highlights recent interruption of wild polio virus transmission in the country. WHO and UNICEF estimates similarly suggest improvements in coverage during 2015 to 2019 (WHO and UNICEF, 2020). Even in areas with high coverage, it is important to know attitudes and behaviors toward immunizations in order to improve services and maintain high coverage. It has therefore become necessary to examine these maternal issues in relation to immunization as well as associated factors. The aim of the current study is therefore to assess Mothers' knowledge, attitude and practice of childhood immunization in Oyo.

Statement of Problems

As reported by WHO (2014), 22.4 million children were incompletely vaccinated at 12 months of age and remained at risk for vaccine-preventable morbidity and mortality. The result was more disturbing when it revealed that more than half of all incompletely vaccinated children live in India (32%), Nigeria (14%), and Indonesia (7%). Vaccines are one

of the best and most cost- effective public health interventions known to man. Nigeria is a large country with high child mortality and low immunization coverage rates. Of the 6 million Nigerian children born every year, more than 1 million fail to get fully vaccinated by their first birthday (IVAC, 2012). Current coverage rates for the various childhood vaccines in Nigeria are among the lowest in the world (Babalola & Aina, 2004). For instance, Measles was responsible for 5 percent of the child deaths in Africa (Bryce, Boschi-Pinto, Shibuya & Black, 2005), of an estimated 282 000 deaths in 2003 (Stein, Birmingham, Kurian, Duclos & Strebel, 2005; WHO, 2003); half of these occurred in Nigeria (Hersh, 2005). NDHS (2013) Differentials in the coverage levels show that the proportion of children fully vaccinated is lower for children in rural areas (16 percent) than in urban areas (43 percent) and it is on the background that this study aims to assess mothers' knowledge level, attitude and practice to children immunization in three primary health centres.

Objective of the study

The objective of this study is to assess mothers' knowledge level, attitude and the attitude to childhood immunization in three primary health centres in Oyo town.

Research Questions

1. What is the mother's knowledge on immunization in Oyo town?
2. What is the attitude of mothers towards immunization in Oyo Town?
3. What is the practice of mothers on immunization in Oyo Town?

METHODOLOGY

Population of the Study

The study population comprised of mothers in three selected primary health care centres in Oyo town.

Sample and Sampling Technique

The samples for the study were mothers from three Primary Health Centers in Oyo town. Stratified sampling was used to select the Primary Health Centers while simple random sampling technique was used to select one hundred and twenty mothers from these centers.

Research Design

The design was a cross sectional survey.

Research Instrument

The Knowledge, attitudes and practice questionnaire (KAPQ), which was a researcher developed scale is divided into two sections. The first part dealt with participants socio-demographic details while the second part has 3 subscales measuring attitude, knowledge and practice to childhood immunization. This part was structured as a 4-point Likert-type rating scale.

Validity and Reliability of the Instrument

The instrument was subjected to face validity. To ensure this, it was given to experts to make corrections and for perfection. The reliability of the KAPQ was ascertained by employing the test-retest reliability method using the Cronbach's Alpha. The test-retest returned a coefficient of 0.71 which was considered adequate for the conduct of the study.

Method of Data Collection

The questionnaires were administered to the participants by the researcher. The questionnaires were administered and collected on the spot. This ensured 100% response rate.

Method of Data Analysis

The data were expressed as descriptive statistics, which include frequency counts and percentages.

Results

Table 1: Socio Demographic Data of the Mothers

Characteristics	Number (%)
Mother's age (years)	
<25	36 (30.00)
26-30	51 (42.50)
31-35	23 (19.17)
36-40	06 (5.00)
>40	04 (3.33)
Mother's education	
Primary	22 (18.33)
Secondary	60 (50.00)
Tertiary	35 (29.17)
None	3 (2,50)
Mother's occupation	
Trader 5)	78 (65)
Civil servant	42 (35)
Mother's marital status	
Single	18 (15.00)
Married	102 (85.00)

Responses from table 1 show that 42.50% of the mothers were between age 26-30, 85% were married and only 5% does not have formal education.

Research Question 1: What is the mother's knowledge on immunization in Oyo town?

Table 2: Knowledge of child bearing mothers about immunization

S/N	ITEMS	SA	A	D	SD
1	Immunization is a process of preventing children or adults from having infection	65 (54.17)	35 (29.17)	20 (16.67)	0

2	Immunization cannot be used to prevent diseases like malaria, HIV/AIDS and gonorrhea	20 (16.67)	25 (20.83)	35 (29.17)	40 (33.33)
3	I know how many times each vaccine is administered to my child	10 (8.33)	45 (37.50)	60 (50.00)	5 (4.17)
4	There is adequate immunization awareness programme in my area	25 (20.83)	50 (41.67)	35 (29.17)	10 (8.33)
5	There are cultural beliefs against immunization in my community	15 (12.5)	25 (20.83)	64 (53.33)	16 (13.34)
6	I believe immunization has an adverse effect	12 (10.00)	22 (18.33)	34 (28.33)	52 (43.34)
7	I feel satisfied with the immunization schedule provide in my community	24 (20.00)	60 (50.00)	22 (18.33)	14 (11.67)

Responses from Table 2 reveal that the respondents have the knowledge of items 1, 4 and7 since they have 50% and above for strongly agreed (SA) and Agreed (A).

Research Question 2: What is the attitude of mothers towards immunization in Oyo Town?

Table 3: Reasons for negative attitude towards immunization

S/N	Reason	Yes	No
1	Mother was too busy	42 (35)	78 (65)
2	There was a family problem	24 (20)	96 (80)
3	The vaccine was not available	54 (45)	66 (55)
4	The time for immunization was not convenient	78 (65)	42 (35)
5	I postponed going until another time	54 (45)	66 (55)
6	Don't believe in the vaccine	24 (20)	96 (80)
7	Long queue and waiting time	36 (30)	84 (70)
8	Strike	48 (40)	72 (60)

The percentage scores on Table 3 show that 65% of the respondents agreed that the time for immunization was not convenient while 20% agreed that there was a family problem and they don't believe in the vaccine.

Research Question 3: What is the practice of mothers on immunization in Oyo Town?

Table 4: Assessment of the Immunization Practice