Maternal Compliance Practices during Childhood Pneumonia in Imo State, Nigeria

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Abstract

Pneumonia is a serious acute respiratory infection which, if not prevented, could cause serious illness among children. It can be prevented and treated effectively if mothers could comply with treatment regimen, follow-up and referral practices. Compliance practices are in most cases influenced by factors such as level of education, parity and occupation of mothers. This study aimed at identifying the mothers' compliance practices during childhood pneumonia in Imo State. A cross-sectional survey design was used in order to achieve the objectives of the study. A sample of 2400 mothers of child bearing age (15-49 years) randomly drawn from 26 out of 27 local government areas in Imo State participated in the study. The instrument used to collect data was a structured questionnaire which had a reliability coefficient of 0.86. Results of the study showed that level of education, parity and occupation influenced mothers' compliance practices during childhood pneumonia. Among the recommendations include that doctors, nurses and health educators should teach mothers the importance of adequate compliance practices during childhood pneumonia to avoid drug resistance and death.

Keywords: Maternal, compliance, practices, childhood pneumonia, Imo State

1. Introduction

Pneumonia is one of the most serious acute respiratory infections in childhood. World Health Organization (WHO, 2005) reported that more than 2 million children die of pneumonia every year. United Nations Children's Fund (UNICEF) and WHO (2006) estimated that 90% of pneumonia burden is borne in developing countries, including Nigeria. According to Federal Ministry of Health, Nigeria (2009), 200,000 children in Nigeria die each year as a result of pneumonia. It was projected that burden of the disease might be worse without proper interventions. This high morbidity and mortality among children is a public health problem and a threat to survival which takes a heavier toll on Nigeria. Studies (Sazawal & Black, 2003; Rowe, Olewe, Kleinbaum, McGown, McFarland, Rochat & Deming, 2007) have shown that death due to pneumonia could be prevented and the disease treated successfully at home and health facility using low cost interventions. But the major problem is that mothers may have the tendency to ignore complying with the health workers' advice about treatment regimen, follow-up and referral practices as recommended by WHO (1994) integrated management of childhood illnesses evidence based guideline for treatment, follow-up and referral.

Wikipedia (2011) referred to compliance in terms of treatment, follow-up and referral as the degree to which a patient correctly follows medical advice. DiMatteo (2004) described compliance as following the doctor's orders or the accurate observance by patient of a prevention or treatment regimen set out by a health professional. Haynes and Sackett in Busari, Olanrewaju, Desalu, Opadyo, Jimoh, Agboola, Busari and Olalekan (2010) defined compliance as the extent to which a person's behavior, in terms of keeping appointments, taking medications and executing lifestyle changes, coincides with medical advice. Compliance practices in the present study involve caregivers/mothers giving their children between the ages of 0-5years a full course of prescribed medications in the right quantities and at the right times, keeping appointments, returning for follow-up and observing referral. Compliance has been a major problem especially in the treatment of childhood illnesses. In support of this WHO (2003) observed that 50% of mothers for whom treatment regimens are prescribed for their children do not follow them as directed. They noted that drug compliance is difficult especially when the drugs need to be taken or administered for a long period of time.

Compliance practices may be influenced or controlled by a variety of factors such as caregiver's/mother's perception of the severity of the illness, her attitude towards health care system, her perceived relationship with the health care provider, her trust in modern versus traditional medicine, cost of medical care, adverse drug reactions, inadequate access to medical care and the type and appearance of the prescribed drug (DiMatteo, 2004; Ngoh, 2009).

DiMatteo, Giordani, Lepper and Croghan (2002) postulated that compliance with medication may be influenced by a variety of factors such as the duration of therapy, the complexity of treatment regimen and the taste of the medicine. In the case of compliance with referral and follow-up, they observed that compliance may increase with the care mothers' level of education, which means that the higher the educational background of the mother the better her understanding and therefore her compliance with follow-up regimen. They also noted that proximity to the health facility, first treatment dose a child receives at the first visit to the facility, age, income of caregiver and the type of child's illness such as cough and ear problem also influence compliance.

On the other hand, Homedes and Ugalde (1993) agreed that reasons for patients non-compliance include poor communication between practitioners and patients, poorly organized health services, the cost of medicines, the patients feeling of improvement, and the nature of the treatment (too many drug side-effects and lack of trust). WHO (2001) in a study carried out in Ecaudor, found out that 42% of referred children did not follow the referral instructions. In the same vein, WHO (2002) discovered that only 43% of children referred attended hospital on the day of referral and in terms of follow-up, only 23% returned to the health facility on or before the due date.

Homedes and Ugalde (2001) suggested that caregivers should comply with treatment regimes, referral and follow-up instructions because not complying to treatment regimes, follow-up and referral instructions may lead to incomplete treatment, therapy failure, drug resistance and later misuse of left over medicines which can cause unnecessary mortality and morbidity. In some situations these factors may be controlled but mothers' compliance practices may still remain low because of certain individual perception of the actions that contribute to adoption of certain compliance behavior. This study was anchored on the Health Belief Model (HBM).

2. The Health Belief Model (HBM)

In 1950, there emerged from the United States Public Health Service a theoretical framework based on social theory to help understand behavioral patterns (Mullen, Hersey, & Iverson, 1987; Rosenstock, 1966; Rosenstock, 1974). This approach has been frequently applied to study health behavior, including compliance to treatment of health problems. From its original conceptualization, variations to the model have proliferated; usually resulting in more detailed models (Rosenstock, 1988). Theories and frameworks have also been derived from the HBM. The most important theoretical approaches used are: the Social Learning Theory (Bandura, 1977a, 1977b), later re-named as Social Cognitive Theory, the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (Ajzen & Madden, 1986), and more recently, the Interactional Framework (Van Campenhoudt, Cohen, Guizzardi & Hausser, 1997).

According to cognitive theories, the HBM is forms part of; the roles of subjective rationales for health-related issues are a function of the subjective values of an outcome, and of the subjective expectations that a particular action will achieve that outcome. In its original formulation, the HBM hypothesized that health related actions depend upon the simultaneous occurrence of three classes of components: 1) the existence of sufficient motivation to make health salient; 2) the belief of a perceived threat to health; and 3) the belief that following a particular health recommendation would be beneficial in reducing the perceived threat (Rosenstock, 1966; Rosenstock, 1974; Becker, 1974; Rosenstock, Stercher, & Becker, 1988). These beliefs are likely to influence compliance practices of mothers in Imo State, Nigeria. The relationship between these components and behavior is held to be mediated by demographic, structural and enabling factors such as those mentioned earlier.

Despite, the intervention programs by WHO/UNICEF through IMCI approach to reduce morbidity and mortality as a result of pneumonia, childhood pneumonia continues to take a heavy toll in Nigeria and Imo State in particular. This reason could be that mothers do not comply with the treatment, follow-up and referral practices. Kaplan and Simon (1990) observed that parents do not adopt the behaviors and treatment regimen recommended by their health providers during childhood illness. In the same vein, Rapoff and Bernard (1991) estimated that at least one third of all patients fail to comply adequately even for short-term antibiotic regimens which is the commonest prescriptions for the treatment of pneumonia. There is no evidence about maternal compliance practices during childhood pneumonia in Imo State. Such evidence is needed to guide health interventions to improve compliance practices during childhood pneumonia among mothers. Therefore, this study was designed to determine the mothers' compliance practices during childhood pneumonia in Imo State. Specifically, the study aimed at identifying the mothers' compliance practices during childhood pneumonia in Imo State, the influence of level of education and occupation on mothers' adoption of compliance practices during childhood pneumonia.

3. Methods

3.1 Participants and setting

A cross-sectional survey were conducted four months apart (December 2014 and may 2015) so as to collect data from a sample of 2400 childbearing mothers (15-49 years) drawn randomly from eight out of the twenty seven Local Government Areas of Imo State. Imo State has a population of 12,485,499 (National Population Commission, 2006) of which approximately 15% are children aged below five years. Imo State has Federal, State and Community hospitals, Clinics and Health Centres. In addition, a large number of health care is also provided in private fee-for-service centres with some beds which are often referred to as government health institution and private hospitals. Majority of the population has access to health services but the provision of health care in the state tends to have inadequate impact on childhood mortality especially as a result of pneumonia. A good number of mothers are educated enough to understand the importance and benefits of complying with health workers advice on treatment, follow-up and referral in childhood pneumonia.

3.2 Sample and sampling techniques

A multi-stage sampling procedure was used for the study. The twenty seven LGAs in Imo State were stratified into urban and rural LGA. Four urban LGAs and four rural LGAs were selected using purposive sampling. The essence of this was to enhance enablement of comparison of the results on the basis of urban- rural divide. Ten political wards were randomly selected from the eight LGAs. Systematic sampling technique was employed to draw a sample of 30 households from each of the selected political wards. In every selected household one mother aged between 15-49 years was randomly selected for the study. In a situation where there was no mother aged between 15-49 years in the household, further sampling was carried out to replace such a household.

3.3 Instrumentation

The instrument used in this study was a researchers' designed multiple response type questionnaire called Compliance Practices Questionnaire (CPQ) in which none of the options was most applicable. The CPQ was subjected to face and content validation using five experts in Child Health from University of Nigeria Teaching Hospital, Ituku Ozalla, Enugu State, Nigeria. The CPQ covered the personal data of the respondents and such aspects of compliance practices as drug regimens, follow-up and referral. Data collected from thirty mothers from Okigwe local government area of Imo State, not included in the study, yielded a spearman brown reliability co-efficient of r = 0.86 which was considered high enough to deem the instrument reliable for use in the study.

3.4 Data collection

The permission to allow the mothers to participate in the study was obtained from the head of the family before questionnaire administration. Nine trained research assistants helped in the data collection. The questionnaire was administered on the mothers in their respective homes. Mothers who could read and write filled out their own copies of the questionnaire. They were asked not to write their names or that of their family on any part of the questionnaire. The participants who could neither read nor write were asked questions on the subject matter based on the questionnaire and the researchers and the assistants assisted them to enter their responses in the questionnaire.

3.5 Data analysis

The completed copies of the questionnaire were examined for completeness of responses and copies that had incomplete responses were discarded. The Special Package for Social Sciences (SPSS) version 20.0 for windows was employed to analyze the data. Percentages were used for the purposes of describing the compliance practices of the mothers. World Health Organization's (1997) standard cut-off of 50% was used for deciding whether a practice was adopted by the respondents. The chi-square (χ^2) statistic was utilized to verify the hypotheses of no significant association ($p > 0.05$) between the dependent (compliance practices) and independent variables such as level of education, parity and occupation.

4. Results

Table 1: Compliance practices adopted by mothers

Compliance Practices	*Responses*	
	f	*%*
Give babies drugs according to health workers instructions	1564	79.4
Take baby back to health worker for check-up	1322	67.1
Comply with health workers advice to take baby to another hospital	1451	73.7
Cluster overall	**1505**	**76.4**

Table shows that 1564(79.4%) mothers gave babies drugs according to health workers instructions, 1322(67.1%) took babies back to health workers for check-up and 1451(73.7%) complied with health workers advice to take baby to another hospital.

Table 2: Mothers' compliance practices according to level of education

Compliance Practices	Responses							
	Education							
	Non-formal (n = 330)		Primary (n = 401)		Secondary (n = 623)		Tertiary (n = 615)	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Give baby drugs according to health workers' instructions	247	74.8	295	73.6	476	76.4	546	88.8
Take baby back to health worker for check-up	189	57.3	248	61.8	392	62.9	493	80.2
Comply with health workers' advice to take baby to another hospital	210	63.6	281	70.1	457	73.4	503	81.8
Overall	223	67.6	290	72.3	456	73.2	536	87.2

Cal. $\chi^2 = 61.017 > \chi^2$ Critical= 7.815, df = 3, $p < 0.05$)

Table 2 shows that following health workers' advice for treatment when babies have pneumonia, take babies back to health worker for check-up and complying with health workers' advice to take babies to another hospital when babies have pneumonia are adopted by mothers irrespective of their educational level. The overall result suggests that compliance to health workers' advice on treatment, follow-up and referral practices are influenced by mothers' educational level and the influence is significant.

Table 3: Mothers' compliance practices according to parity

Compliance Practices	Less than 4 (n = 643)		4 Children (n = 622)		Above 4 children (n = 704)	
	f	*%*	*f*	*%*	*f*	*%*
Give baby drugs according to health workers' instructions	536	83.4	462	74.3	566	80.4
Take baby back to health worker for check-up	468	71.2	399	64.1	465	66.1
Comply with health workers' advice to take baby to another hospital	508	79.0	457	73.5	486	69.0
Overall	525	81.6	456	73.3	524	74.4

Cal. χ^2 = 14.640 > χ^2 Critical 5.99, df = 2, p < 0.05)

Table 3 shows that majority of the mothers comply with health workers advice to treatment (80.4%), follow-up (71.2%) and referral practices (79.0%) irrespective of the number of children. The overall result suggests that compliance practices are influenced by parity and the influence is significant.

Table 4: Mothers' compliance practices according to occupation

Compliance Practices	Civil Servant (n = 713)		Business (n = 645)		Student (n = 263)		House Wife (n = 348)	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Give baby drugs according to health workers' instructions	621	87.1	503	78.0	185	70.3	255	73.3
Take baby back to health worker for check-up	554	77.7	414	64.2	161	61.2	193	55.5
Comply with health workers' advice to take baby to another hospital	584	81.9	457	70.9	205	77.9	205	58.9
Overall	608	85.3	487	75.5	184	70.0	226	64.9

Cal. χ^2 = 62.869 > χ^2 Critical= 7.815, df = 3, p < 0.05)

Table 4 shows that most of the mothers complied with health workers advice to treatment, follow-up and referral practices when their babies have pneumonia irrespective of their occupation. The table shows that majority of the civil servants 87.1%, 77.7% and 81.9% respectively complied with health workers' advice to treatment, follow-up and referral. The overall result suggests that compliance practices are influenced by mothers' occupation and the influence is significant.

5. Discussion

Maternal compliance to treatment regimen can effectively contribute to reduction in death of children as a result of childhood pneumonia especially with accurate diagnosis and appropriate prescription given. The results in

Table 1 showed that the mothers (76.4%) adopted compliance to treatment regimen, follow-up and referral practices. The reason for increase in compliance practices among mothers in the study area could be as a result of better attention given by health personnel at health care facilities to caretakers who were mostly mothers. These findings are not surprising because of the evidence-based guidelines for treatment, follow-up and referral of children which are now made available as part of Integrated Management of Childhood Illness (IMCI). This guideline is relatively a recent innovation in the management of childhood illnesses. The innovation lays emphasis on improvement in household and community practices by empowering mothers/caretakers about child health, nutrition and development.

The results also showed that level of education, parity and occupation influenced compliance practices among mothers in the study area. The results could be suggestive of the fact that better education is an instrument of change, influencing negative health practice towards a positive one. The results of the present study showed that level of education influenced mothers' compliance practices during childhood pneumonia episode. This clearly affirmed Mosley and Chen (1984) and Caldwell (1994) assertions that maternal level of education is a determinant of child health. Education changes a person's practice about a particular issue. It therefore implies that the more a mother is educated, the more she would comply with health professionals' advice to treatment regimen, follow-up and referral.

The results in Table 3 showed that parity has a statistical influence on mothers' compliance practices during childhood pneumonia. The result was expected based on the assertion of Wolfers and Scrimshaw (1975) that high parity in terms of the number of children a woman has, had strong and negative impact on child survival. It could be reasoned that children of higher parity mothers may not get proper care because they face competition for available resources such as food and medical care by virtue of being born in the large families. It could be observed that mothers in the study area are characterized by high parity. This practice may affect their compliance practices with treatment regimen, follow-up and referral during childhood illnesses. Health policy makers and health educators are challenged to effectively advice mothers on the need for low parity.

The results of the study showed that of occupation of the mothers affected their compliance practices during childhood pneumonia. This implies that the type of job the mothers do, impacted on their compliance practices. Majority of the mothers are civil servants, their job demands may not give them enough time to adequately comply with health personnel advice on treatment, follow-up and referral.

Conclusion and Recommendation

In conclusion therefore, the study buttressed that mothers adopted compliance practices during childhood pneumonia in Imo State. The study also revealed that level of education, parity and occupation significantly influenced mothers' compliance practices. This might mean that with proper education, less number of children and good occupation the issue of mothers' compliance practices during childhood pneumonia could be positively improved. The findings show that mothers in the study area were of high parity. This has serious implication for health education programs, especially in the area of Planned Parenthood advice.

Every child bearing mothers should be educated on the need for low parity. It is recommended that doctors, nurses and health educators should teach mothers the importance of adequate compliance practices during childhood illnesses, including pneumonia to avoid drug resistance and death.

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