INTEGRATED HEALTH EDUCATION AND COMMUNITY DEVELOPMENT IN RURAL AREAS OF KANO STATE: THE TOFA EXPERIENCE

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Abstract

A Community Health Diagnosis project was conducted at Tofa town, Tofa Local Government Area of Kano State under the Community Based Medical Education and Services Programme (CBME & SP) of the Faculty of Medicine, Bayero University Kano, with the assistance of Aminu Kano Teaching Hospital, Tofa Local Government Council, community leaders and other individuals. The aims, objectives and basic principles of such education programme are determined by the health needs of the community within which it is conducted and takes the form of problem-based learning. This programme adopts a comprehensive rather than a mainly curative approach to the training of medical graduates that focuses on both population groups and individual persons within a community so as to ensure that upon graduation the trainees can competently perform the tasks relevant to the health care development of the community concerned. Learning activities were conducted by the students, under the supervision of their teachers where they applied principles of epidemiological survey for common infectious diseases and other health problems in Tofa community, within the context of its socio-demographic features, Services in terms of health campaign in aspects Primary Health Care, consultation and free medications, Health Intervention Projects in ophthalmology, Dental and Maternal Care Services, Psychiatry outreach services and the improvement of genera! health care services in the community. Evaluation of the impact of these would be conducted at the later part of students' training before graduation. The programme represents a model of integrated and comprehensive health education and health care development for rural communities in Nigeria. Key Words: Health Education, Community Services, Development.

Introduction

An educational programme that focuses on both population groups and individual persons, which takes into account the health needs of the community is described as Community-Oriented Education. The aims, objectives and basic principles of such education programme are determined by the needs of the community within which it is located. This programme adopts a comprehensive rather than a mainly curative approach to health promotion in order to achieve the desired objectives of health for all (WHO, 1987)

Community-Based Education is a means of achieving educational relevance to community needs and consequently, of implementing a community-oriented educational programme. It is a comprehensive approach to the training of medical graduates that focuses on both population groups and individual persons within a community and ensures that upon graduation the trainees can competently perform the tasks relevant to the health needs of the community concerned.

The programme consists of learning activities that use the community extensively as a learning environment, in which not only students but also teachers, and members of the community and representatives of other sections (authorities) are actively engaged throughout the educational experience. It is an important policy of the World Health Organisation and the World Federation of Medical Education to foster this type of education programme for health personnel that will make them responsive to the needs of the population they serve (WHO, 1987).

Institutional Objectives of the Faculty of Medicine, Bayero University Kano

The institutional objective of the Faculty of Medicine, Bayero University, Kano, was developed and adopted as a community-based educational curriculum such that on successful completion, of the MBBS programme, the graduate of the Faculty could have developed attitudes and acquired
knowledge and skills to be able to:

1) Practice as a general practitioner in urban and rural community and practice preventive/curative medicine, taking into account the role of interpersonal relationship in families and communities, and the social, cultural and traditional factors that might have a bearing on health and disease.

2) By the use of clinical skills, including personal interviews and physical examination and by means of appropriate but simple laboratory, radiological and other investigative procedures, diagnose and take an initial decision on every patient who presents himself or herself to him.

3) Perform minor surgical procedures and life-saving emergency procedures in general practice, whether in urban or rural areas and to perform professional services within the concept of Primary Health Care systems.

4) Develop a personal character required of a professional doctor to enable him uphold the ethics of the profession in his/her relationship to patients, colleagues and other health care workers.

5) Possess adequate management capabilities and professional experience to be able to play a leadership role in the health care team and undertake postgraduate or continuing medical education.

Achieving these objectives will aid reduce the overemphasis of the hospital-based model of medical education and medical care which over concentrates on the scarce resources in a few health centres, distorts the perception of the priority health needs and creates a system inaccessible to, and alienated from, most of the population, which often leads to dissatisfaction among highly-trained physicians who cannot get appropriate tools to work with (and therefore seek employment in rich countries), and discourage self-reliance in peripheral health workers (Alausa, 1988).

The Community Based Medical Education and Services Programme (CBME & SP)

This is a community-oriented academic activity which involves community participation in the development and implementation of the community based health programme is conducted as part of the curriculum. The medical school cooperates with identified local authorities as well as social and cultural groups and community health committees in the various communities that are used as educational sites. One clerkship field posting activities is carried out during the pre-clinical years (3001evet) in defined communities, which are selected based on certain standard criteria, while during the clinical years (500 level) another posting is carried out in the same community where the initial posting was conducted by the students. The programme consists of learning activities that use the community extensively as a learning environment, in which not only students but also teachers, and members of the community and representatives of other sections (authorities) are actively engaged throughout the educational experience. It is a comprehensive approach to the training of medical graduates that focuses on both population groups and individual persons within a community and ensures that upon graduation the trainees can competently perform the tasks relevant to the health needs of the community concerned.

This form of curriculum is also obtainable in three other Nigerian Universities: Ogun State University, Sagamu; University of Ilorin, Ilorin and Obafemwo Owolowo University Ile-Ife, and outside Nigeria in the University of Newcastle, Australia; Suez Canal University, Isma’ilia, Egypt; Gudjah Mada University, Yogyakarta Indonesia; Health University of Linkoping, Sweden; University of the Philippines, Manila etc (Hassan et al, 1988; Alausa, 1993). There exists a network of community-oriented educational institutions for health sciences connoted as University Partnership in Essential Health Research, a voluntary association of University Health science facilities around the world, which emphasizes self-help and mutual support. The activity of this association is "demand-driven" and specifically targeted towards population-based research activities to complement and strengthen the work of its sister member-institutions in community-oriented health education (Urbina and Kaufman, 1991).

CBME & SP Curriculum

The curriculum has 2 basic characteristics:-

(a) Learning is integrated (problem-based) and student - centred.
Learning is community-oriented and community based.

Integrated Learning

As opposed to the system of "spoon feeding" teaching, the concept of self-learning is adopted to enable students pursue a continuing education. The taught component of CBME & SP is therefore integrated and multidisciplinary with inter-departmental, inter-faculty and at times inter-institutional inputs. The methods of instruction range from formal lectures, practical exercises and tutorials to guided field visits, case studies, individual and group assignments leading to oral and written reports where applicable. However, didactic lectures are reduced to the minimum and students will be exposed to the learning process through problem solving analysis and interpretations of data and actual performance of various skills in the course of their training.

This form of integrated learning and self training would equip medical graduates of Bayero University Kano with the necessary attitude and ability to undertake continuing education throughout their career as medical practitioners.

Community Based and Community Oriented Learning

Community-based learning activity is one that takes place within a community or in any of a variety of health services settings at the primary or secondary care level. Community-based educational programme is therefore an educational programme that has an entire duration in the period of medical training and consists of an appropriate number of learning activities in a balanced variety of educational settings i.e. in both the community and a diversity of primary and secondary levels of health care services. The distribution of community based learning activities throughout the duration of the curriculum is an essential characteristic of a community based educational programme.

The Bayero University CBME & S Programme therefore involves community participation in the development and implementation of the community based health programme of the faculty. The faculty cooperates with identified local authorities as well as social and cultural groups and community health committees in the various communities where its medical education is sited. This is achieved by carrying out 1 clerkship field posting activities during the pre-clinical years in defined communities (CBME & SP posting sites) which are selected based on certain standard criteria. During the clinical years (500/600 level) one clerkship is carried out in defined secondary health centres within the community (clinical CBME & SP posting).

Minimum Learning Objectives of Pre-Clinical Posting

At the end of the posting the students should be able to:

1) Produce a simple map identifying important utilities, buildings and general infrastructure in the community.
2) Produce data based on simple census procedures and construct demographic characteristics of the community.
3) Identify and interview important community figures as a means of establishing communication with the community and obtaining information.
4) Identify the basic health problems and environmental sanitation conditions of the community.
5) Identify and assess social amenities available to the community-health care delivery facilities, water supplies, schools, recreational facilities, road net-work etc.
6) Observe and describe the general life pattern of the community, major occupations, culture and traditions and the relationship of these and the general environment on the health status of the community.
7) Undertake any optional project decided upon by the team with the approval of supervisors.

Methodology of Implementation

The methodology of implementation of the programme involves preparation of faculty staff to understand the philosophy of the programme and their expected inputs, selection of appropriate communities in conformity with programme criteria, preparation of communities for acceptance and cooperation with the programme, preparation of students through lectures and discussions, programme implementation posting of 5 weeks duration, compilation of students reports and
presentation to the faculty in the presence of representatives of the State Ministry of Health, Local Government, Education and representatives of the community visited and the evaluation of student achievement in the programme.

Community Health Diagnosis is a comprehensive assessment of the state of health of an entire community in relation to its social, physical and biological environment so as to determine its health problems, find set priorities, for planning and development of care for the community. Postings were undertaken in communities in Bichi, Dawakin Tofa, Wudil, Dawakin Kudu and Kumbotso Local Government Areas, and most recently, in Tofa Local Government.

A written examination comprising Multiple Choice Questions (MCQ) and orals are conducted at the end of each posting, to assess individual students’ performance in the exercise.

**The Tofa Experience**

Tofa town is located on the longitude 8° 17’ - 8° 25’ and latitude 12° 6’ - 12° 8’ north of the equator. It exists in the western part of Tofa Local Government Area of Kano State, 30 Km away from the Municipal. The town has a total area of 17.1 Km², with an estimated population of 12,330 people distributed within seven wards in the town.

Vegetation of Tofa is a typical Suda Savannah characterized by short scattered trees, tall grasses and loamy type soil, with two main seasons: the wet and dry seasons. The settlement pattern is nucleated type with very few scattered settlements. Life pattern of the people of Tofa is typical of Hausa Fulani of Northern Nigeria.

The 300 Level CBME & SP field posting activities for the academic year 2001/2002 were conducted at Tofa Town, between September and November, 2002.

Tofa Local Government area was selected by the standard criteria of Alausa (1988) for the selection of field posting sites. With the support of The Bayero University and the willingness of the community leaders to sustain the programme, it was intended that Tofa would be utilized for the next six years as posting site by the Faculty.

**Pre-Posting Preparations**

A schedule of activities was drawn up for the period of posting. In accordance with the ethical considerations in community - based medical researchers, the Community Leaders (Local Government Council and traditional rulers) were formally informed of the intention of the Faculty to conduct the programme. Seminars were conducted for the students to prepare them adequately for the field activities and they were assigned supervisors from staff members. The Coordinator, Assistant Co-ordinator, Team Leaders and (heir Assistants constituted a coordinating team for the posting activities. A staff seminar was held to refresh the participants on the philosophy, modalities as well as their role in the execution of the programme.

**Programme Implementation**

The programme commences as per (he provision of the revised guide-lines of the prc-clinica'l field posting activities and in accordance with the prepared schedule of activities for both students and members of staff.

Results obtained are analysed and presented. Areas usually covered include: -

1) Demography- including such vital statistics as could be obtained. Socio-economic status of the people in the communities is also ascertained.
2) Frequency of common illnesses/diseases in the communities
3) Health resources and health services available to the communities

Demography is the study of size, territorial distribution, composition of a population, changes therein and component of such changes, which may be identified as natality, mortality, territorial movement (migration) and social mobility (change in status).
Age and sex distribution of a population could be represented graphically by population pyramid. Population of each age group of each sex is represented by a horizontal bar, the length of which is proportional to the number of people in the age group it represents.

The population distribution of Tofa community is typical to that of developing countries which is characterized by a high population of children, indicating a high birth rate. The low population of subjects with higher ages indicates a high mortality with increase in age.

Vital Statistics

The vital statistics fall under demographic statistics which include demographic events like births, deaths, marriages, divorces, and separations etc. The registration of births and deaths, particularly are compulsory in the developed countries, but only in some of the developing countries.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Birth Rate</td>
<td>82/1000</td>
</tr>
<tr>
<td>Crude Death Rate Infant</td>
<td>/1000</td>
</tr>
<tr>
<td>Mortality Rate Maternal</td>
<td>840/1000</td>
</tr>
<tr>
<td>Mortality Rate Under Five</td>
<td>840/100,000</td>
</tr>
<tr>
<td>Mortality Rate</td>
<td>318/1000</td>
</tr>
</tbody>
</table>

All these findings are approximately the national figures for Nigeria provided by the Federal Ministry of Health (1985).

Health Care Facilities in Tofa Town

Health care facilities can be defined as the available resources or institutions within the community which they use either directly or indirectly for the treatment or prevention of diseases and any other type of health care service they use.

Two major type of health care facilities found in Tofa town viz: 1). Orthodox health care facilities comprising the comprehensive health centre, the health post, the private clinic and the patent drug stores.

2) Traditional health care facilities comprising the traditional birth attendants (ungozoma), the local barbers (wan zamai) holistic healers (mallams), butchers, bone setters blacksmiths etc
Among the orthodox sources of medical care these are the most utilized souces of Tofa town. Most of the people selling drugs have only secondly education and only few are educated in a School of Health Technology. They also give injections when necessary.

**Attitude When Sick**

The patronage of the people of Tofa town towards seeking health care showed that 59.4% patronize the orthodox health care institution, 18.9 % patronize the traditional healers while up to 16.3 % practice self medication.

**Health Problems of Tofa Community**

<table>
<thead>
<tr>
<th>Common Illness</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fevers</td>
<td>40.4%</td>
</tr>
<tr>
<td>2. Jaundice</td>
<td>23.6%</td>
</tr>
<tr>
<td>3. Cough</td>
<td>7.4%</td>
</tr>
<tr>
<td>4 Dental caries</td>
<td>5.0%</td>
</tr>
<tr>
<td>5. Simple diarrhoea</td>
<td>4.9%</td>
</tr>
<tr>
<td>6. Scabies</td>
<td>4.7%</td>
</tr>
<tr>
<td>7. Diarrhoea writing</td>
<td>3.8%</td>
</tr>
<tr>
<td>8. Measles</td>
<td>3.3%</td>
</tr>
<tr>
<td>9. G/worm</td>
<td>1.8%</td>
</tr>
<tr>
<td>10. Conjunctivitis</td>
<td>1.7%</td>
</tr>
<tr>
<td>11. Others</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

As part of Community Health diagnosis (the health services and health resources of communities and how these relate to particular health problems that have been identified are examined. These include services:

(i) **Health Education**

Majority of the inhabitants were fairly informed about health matters, in that 71.7 % of the respondents obtained information about health through radio, 11.9% from health personnel as seen from the chart, 2.6% from newspapers. Radio has become cheap and is therefore now the commonest source of health education in all communities. However, some messages broadcast are either not understood by the people, or even where they are understood, they are not being put into practice.

Further, the sources of health education also relate to the level of education of the populace. In Tofa, 4.7% attained tertiary level of education, 21% Primary, 13.5% Secondary and 0.5% Adult literacy. Almost the whole of the community have acquired a certain level of Islamic Education, but up to 63.3% possess only this level of education.
(ii) **Housing**

Housing comprises of the physical structure providing shelter, the immediate surroundings, and related community services and facilities. In Tofa, the majority of the buildings are mud-type, with small windows, mainly one per room. This indicates poor ventilation. It is a known fact that poor ventilation and congestion in a room, predisposes people to relatively high frequency of air-borne or droplet infections like meningitis, common cold, measles, tuberculosis and poliomyelitis.

(iii) **Immunization Services**

Immunization is aimed to reduce mortality and morbidity among children by immunizing them against the six major immunizable diseases of children. These include measles, whooping cough, diphtheria, tetanus, tuberculosis and poliomyelitis B, cerebrospinal meningitis and yellow fever and also included. Immunization coverage is also determined by ascertaining whether or not children were being vaccinated against these diseases. The coverage of immunization in Tofa communities is about 12%. Part of the reasons that contribute to this situation apart from wrong perceptions of parents include inadequate availability of vaccines, lack of logistical knowledge on the part of parents about the time and place vaccinations are available or about the appropriate age or interval at which to bring the children for immunization. Other reason for the low coverage is suspicion by the majority of the populace on the contraceptive effect of vaccines. The suspicion may have link with the impression already created in the minds of the people in the developing countries on the pronounced efforts of US government and these humanitarian organizations in the propaganda on family planning with the sole objective of checking population growth in the developing countries in order to ensure their economic, political and military subservience to the west.

(iv) **Maternal and Child Health Services Including Family Planning**

Promoting the health of mothers of child bearing age and their children, could give the children opportunity for normal growth and development and of course decreases maternal mortality and morbidity rates. Up to 68.6% of the pregnant women in Tofa town attend antenatal and post-natal care. However, about 85.4% of the people do not believe in orthodox method of family planning. Acceptance of contraception and family planning is low in the rural areas. Religious and cultural factors and refusal of husbands to allow their wives to use contraception mainly due to low level of education count heavily against efforts at family planning. Statistics in developing countries show very high morbidity and mortality in these groups compared with the rest of the population.

(v) **Food and Nutrition**

Information obtained includes food availability, diet for adults and children, especially breastfeeding and weaning diet. The nutritional status of children under 5 years of age was also determined in a number of the communities. Majority of mothers breastfeed their children for up to two years but weaning diet comprised of mainly carbohydrate thereby exposing the children to the risk of becoming malnourished. Availability of diet rich in protein for both adults and children is low. This is not unconnected with poverty, which makes it difficult for dwellers in these communities to afford meat and other protein rich foods. On the whole the spectra of diets consumed at breakfast, lunch and dinner in Tofa Community indicated high level of carbohydrate and low levels of proteins and other food classes. Although there are plant proteins, which are affordable such as soya beans, these are not been used due to lack of awareness of their nutritional value. A large percentage of families Tofa were found to be in the habit of using monosodium glutamate (Kafi-zabo) preparations as seasoning. This substance is considered to be unsafe in patients with hypertension and other cardiovascular conditions.

(vi) **Water and Sanitation**

Adequate supply of safe water and basic sanitation, utilizing simple, cheap, reliable and easy to maintain technology. Safe water is regarded as that water intended for human consumption which should be free from pathogenic agents and harmful chemical substance, pleasant to taste, free from domestic purpose. Our survey showed that, about 64% of Tofa people obtained their water from unprotected wells, 26.3% from public taps, 7.5% from bore holes and 2.2% from river. Failure to purify the water and water source may be
a breeding ground for the vector of material parasites. Inappropriate disposal of each, lead to a high incidence of certain diseases such as typhoid, cholera, dysentery, hook warm and other parasitic infestations.

About 82-83% of the population of Tofa use, open dumping method of refuse disposal, while only few use burning and composting method. The pit latrine is the most commonly used sewage disposal system in the communities. Refuse disposal is also in most cases by open dumping with all the health hazards associated with this method. Many persons were, however, found to be defecating outside in the open.

Human excreta is openly dumped before taking to farms (this is only in some house-holds).

(vii) **Oral Health**

This aims to promote oral hygiene, which in turn prevents dental caries. The prevalence of dental caries in Tofa was shown to be 5% of the total health problems in the community. Health education to improve oral hygiene plus provision of basic dental services are recommended. Detail on this could be presented in one of our optional project.

(viii) **Treatment of Minor Ailments**

Ideally there should be adequate provision of curative services. Many health facilities were found to have no adequate equipment and facilities for treating minor ailments. Moreover, utilisation of health facilities in most of the rural communities is low with over 70% in many cases patronising traditional medical care providers instead of seeking the services of orthodox health care facilities Many others prefer to go to patent medicine stores for treatment of their health problems.

(ix) **Availability of Essential Drugs**

Essential drugs are drugs utilized for the treatment of common ailments, injuries and local endemic diseases in communities. The most vital drugs should ideally be available and affordable by everyone in the communities. In Tofa town, about 72.9% of the population obtain drugs from patent stores, 17.4% from health centres, while the remaining 9.7% use traditional medicine. Nonavailability of essential drugs as in health centres partly explain why the patronage of the people of this community to traditional and holistic healers is significantly high.

(x) **Control of Endemic Diseases**

As far as the treatment of common diseases and symptoms such as diarrhoea is concerned, knowledge of the populace about Oral Rehydration Therapy was assessed. It was found that 40.3% of the populace knew how to prepare it correctly, 37.4% described the preparation incorrectly, while about 22.3% did not know how to prepare it. Therefore, less than half of the respondents could prepare Oral Rehydration Solution (ORS), which is the first aid treatment of dehydration cases. Vector control strategies and eradication of intermediate hosts were also assessed and the populace highlighted on their importance in control of common diseases like malaria.

(xi) **Mental Health**

In Tofa town, prevalence of mental illnesses in Tofa was found to be far below 1% of the total health problems of the community. Beliefs of the community on the causes of mental problems as indicated by this survey showed that about 34.4% of the respondents attribute it to spirits, 19.8% to unknown causes, 15.7% to drug abuse, 14.9% due to psychological trauma, 7.9% believed it is natural and 7.3% believed it is due to evil conducts. The community was educated on the factors that can lead to poor mental health.

Based on these, measures to be taken in the control and prevention of these common health problems include:

i) Increase in the sanitary condition;

ii) Proper sewage and refuse disposal; iii) Proper food and personal hygiene; and

iv) Control measures against insect vectors of diseases, these are principally mosquitoes, by using
mosquito nets and destroying their breeding sites.

**Services Programme**

The health campaign activities were conducted at the hospital premises of *Tofa* town. It is part of the services rendered by the students and their teachers to the people of the community and their leaders during the CBME & SP field posting activities.

Members of staff from various units and departments within the Faculty and the Teaching Hospital attended the occasion. A large number of the people of the community, members of the Local Government Council, Traditional leaders and other representatives of the community were also in attendance. Health talks were delivered by the students on various previewed health problems in the community with the aim of enlightening the populace on measures of improving their health conditions. Topics covered include Personal and Environmental Hygiene, Immunization, Maternal and Child Health Oral-Dehydration Therapy etc. A drama was also featured to extend part of the messages.

On-site clinics were conducted by consultants from the Ophthalmology, Surgery, Internal Medical and Obstetrics and Gynecology and Dental Departments of the Faculty, where a number of patients with a variety of cases were seen and given medication. Censuses of patients with major cases who require special attention were compiled for special intervention projects.

**Intervention Projects**

The Community Health Intervention Project was inaugurated with the operation of the 25 major eye cases in January 2002, at the Comprehensive Health Centre in Tofa town.

Of a total of 68 patients with eye problems examined, up to 53 were in need of surgery. The Village Head of Tofa provided all the funding. The Local Government Council provided logistics, while the Bayero University CBME and SP Unit provided the services with the assistance of Aminu Kano Teaching Hospital Kano. The operation of the 25 major eye cases were conducted at the Comprehensive Health Centre in Tofa town.

**Target Projects**

Proposal for the establishment of Dental and Maternal Care Services, Psychiatry Outreach Services and the improvement of general health care services in the community are being developed by the CBME & SP Committee with the hope of its being actualized through the concerted efforts of the Local Government Council, the Bayero University and Aminu Kano Teaching Hospital, before the end of the year 2003. At their clinical level of the training, the students would go back to Tofa community to:

1) Evaluate the impact of pre-clinical field posting activities at that particular site.
2) Partake in the action plan sequel to the pre-clinical posting exercise.
3) Apply their experiences in clinical training in the evaluation of the health problems they studied earlier in the context of primary health care.
4) Design and conduct community-based researches in various fields of their clinical studies. Such would expose them to individual research study in the areas.

The programme would enable the students have the opportunity of having some independence to sharpen their skills acquired during their clinical programme. It will also avail the students with the rich clinical materials (cases) present in the community, which are often not present in the teaching hospital. It will also enable them develop more confidence in facing their future practice after graduation.

**Expected Benefits / Impact of CBME Postings to Students, Staff and the Community**

(a) Opportunities for health services research are also available to both students and their teachers. The findings of the students' investigations are being forwarded as recommendations to appropriate government authorities.
(b) Provision of consultant services to the community as well as training for the students.
(c) As the "field-based faculty" serve as realistic role models for the students, interaction with the Faculty staff and the "field faculty" ensures a continuous exchange of ideas and prevents professional isolation.
The clinical meetings / seminar presentation on of the research reports would provide continuing medical education for residents, medical officers and house officers.

Conclusion

Community-oriented Medical Education is a new approach to training of health professionals, through designing and implementing medical curricula that are adapted to the local needs of the population which in turn enhance the health care development of communities especially in rural areas. Being fully adopted by only four of the medical schools in Nigeria the medical schools in Ilorin, Ille-Ife, Kano and Sagamu, the programme further promotes the relevance of these institutions to development of the immediate community they are located. Community-oriented Medical Education is a model of integrated and comprehensive health education and health care development for rural communities in Nigeria.

Acknowledgements

The success of the programme has in its background, the active support and cooperation of (the Baycro University Management, active participation of the academic, technical, secretarial and supporting staff of the Faculty of Medicine. We particularly acknowledge the cooperation of the Management of the Bayero University Kano and Aminu Kano Teaching Hospital Kano, Tofa Local Government Council, traditional leaders as well as the entire people of Tofa town. Input Technical staff of the Medical Illustration Unit of the Faculty of Medicine, Bayero University Kano and the Cartography Unit of the Department of Geography, Bayero University Kano is also acknowledged. Inputs of staff from other faculties and institutions, whose services were employed as the need arose, are also acknowledged. Finally, the entire Level 300 Medical students, 2001 / 2002 session who made all the data collection under the supervision of their teachers.

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