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# Social, cultural and economic factors in the management of diabetes mellitus in Nigeria

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## Summary

The problems of caring for diabetic patients in the developing world have been getting increasing attention recently. While the focus has often been on peculiar clinical characteristics such as pancreatic diabetes, malnutrition diabetes, J-type and other similar forms, there is a need to explore further the impact of the prevailing social, cultural and economic milieu on the patients and the management of their disease.

The socio-economic status of 147 Nigerian diabetic patients was assessed by the use of an interview format and also their knowledge, attitudes, beliefs, expectations and concerns about diabetes was determined. The study confirmed that most of the patients are illiterate, poor and with very little understanding of the nature of their disease. Their greatest concern was the impact of diabetes on their ability to work and the extreme difficulty in getting their medications regularly and at affordable prices. A survey of twelve pharmacies revealed that many of the oral hypoglycemic agents, insulin, syringes, needles and materials for urine testing are not stocked by most of them.

Some suggestions have been made as to possible solutions which will involve efforts on the parts of health care providers, patients, governments, pharmacies and private organizations in these countries and the international community as well, including the international drug companies. It is hoped that the problem will remain high on the agenda of all those concerned about diabetes and the care of diabetic patients throughout the world.

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## Résumé

Les problèmes de soin des patients diabétiques dans le monde en développement ont reçu récemment une attention grandissante. L'attention a souvent été portée sur des caractéristiques cliniques particulières tel que diabètes pancréatiques, diabètes de malnutrition, de type-J et autres similaires, mais il y a nécessité d'explorer plus avant l'impact sur les patients du milieu social, culturel et économique prédominant et aussi l'organisation du traitement de leur maladie.

Le statut socio-économique de 147 diabétiques Nigérians fut établi après entrevue et aussi leurs connaissance, attitudes, opinions, attentes et soucis du diabète furent determinés. L'étude a confirmé que la plupart des patients sont illettrés, pauvres et avec peu de compréhension de la nature de leur maladie. Leur plus grand souci était l'impact du diabète sur leur capacité de travail et l'extreme difficulté d'obtenir leurs medicaments, à des prix abordables. Un controle de 12 pharmacies révélait que beaucoup des agents hypoglycémiques oraux, insuline, seringues, aiguilles, et matériel pour tester l'urine ne sont pas en stock dans la plupart d'entre elles.

Quelques suggestions ont été faites comme possibles solutions qui impliqueraient des efforts de la part des pourvoyeurs de soin de santé, des patients, gouvernements, pharmacies et organisations privées dans ces pays et aussi de la communauté internationale y compris les compagnies pharmaceutiques internationales.

Esperant que le problème gardera de son importance auprès de tous ceux qui sont concernés par les diabètes et les soins aux patients diabétiques, à travers le monde.

## Introduction

In recent years, there has been an increasing focus on the problems that diabetes mellitus poses in the developing countries of the world. There was an international meeting devoted exclusively to diabetes in the developing world at Dubrovnik, Yugoslavia in 1979 and a special session was also devoted to this subject at the 11th Congress of the International Diabetes Federation (IDF) at Nairobi, Kenya in November 1982. This is a most welcome development because all too often, many people tend to view the problems of diabetes in the world through the prism of the experiences in the industrialized countries. It is also an important focus because it is becoming increasingly clear that diabetes will sooner rather than later become a significant health problem in many developing countries, compounding the problems of communicable diseases which are still highly prevalent there; it is therefore prudent to start to evolve a strategy to cope with it given the peculiarities of the socio-cultural milieu.

Data on many aspects of diabetes in the developing countries (epidemiology, clinical aspects etc.) are scanty at best but even harder to find are documented accounts of the interrelationship of the disease to the prevailing social, economic and cultural conditions and their impact on the patients and their management. Practitioners in the industrialized countries can only vaguely imagine what it is like to take care of diabetic patients who are largely illiterate and very poor, who have to travel long distances by a mammy wagon (a rickety lorry) to get to the hospital, are often lacking in a potable source of water, have irregular supply of electricity if at all, cannot get drugs to buy (and if the drugs are available they are prohibitively expensive) and may have to trek several miles for daily insulin injections come rain, sunshine or dust storm. Although these are some of the problems generally believed to bedevil both the patients and providers alike in the developing countries, more important is the need to document these experiences and observations because it is only then that practical solutions may be formulated.

In this study, we have tried to highlight by the use of an interview format, how the prevailing social, economic and cultural circumstances in Nigeria have had an impact on our patients and the management of their disease. The study also endeavours to explore the knowledge, attitudes and beliefs of the patients about diabetes and their expectations and concerns. Although relatively limited in scope, the findings should none the less prove illuminating especially to those practising in the cushioned world of the industrialized nations because, within our context, there can be very little talk about: food exchanges, bed-time snacks, self-adjustment of insulin dosage and the like, home blood sugar monitoring, continuous ambulatory insulin infusion pump and other modern day methods and accoutrement which are almost routine in the care of diabetic patients in Europe and North America. The important question of how these factors affect the degree of control of diabetes could not be answered because of many confounding variables. However, like the work that was done by Alleyne, Morrison & Richards (1979), this is an aspect which will merit further exploration.

## Materials and methods

Between January 1981 and April 1982, 147 patients were randomly selected from those attending the Diabetic Clinic of the University College Hospital, Ibadan, a 600-bed facility which is at the apex of the health care system for those living in southwestern Nigeria. Questionnaires were administered to all the subjects by one of the authors (E.M.E.) who, as the health education sister for the medical outpatient clinic was well-known to all the patients and was trusted by them. It was important to use somebody well known to the patients for the interviews in order to ensure that as truthful a response as possible would be forthcoming; since many patients tend to be fearful of strangers and would give evasive answers. Even then, the risk of untruthful answers or responses designed to please the interviewer would only be minimized but not totally eliminated. The patients were selected during the clinical sessions and interviewed after they had

been seen by the doctor. About four to ten interviews were done per clinic period and Table 1 provides an outline of the topics covered in the questionnaire. Most of the questions were open-ended. Some patients did not give any response to certain questions so that in some instances, the number of respondents to a question were less than the total of 147 patients recruited. With regards to the clinical data, it was not possible to obtain all relevant clinical information on all the patients beause several of them had missing case files or inadequate records.

In a companion study, self-administered questionnaires were sent to eighteen pharmacies or drug stores in the city of Ibadan in an attempt to evaluate the pattern of pharmaceutical retailing as related to the management of diabetes mellitus. Twelve of them completed the questionnaires and the results of that survey are also included in this report.

*Data analysis.* For easier analysis of the data, the responses were coded and entered onto computer discs using facilities at the National Institutes of Health, Phoenix, AZ, U.S.A. They were then analysed using a statistical analysis system (SAS) programme and descriptive statistical data mainly in the form of frequency tables were generated.

# Results

## Diabetes survey

Some of the results are presented in the series of tables which are compiled in 'Appendix', and they have been numbered sequentially as they are referred to in the text.

*General.* There were eighty-one males and sixty-six females and this reflects the slight male preponderance generally seen in our clinic. Distribution of the patients by age intervals demonstrated that the majority (62.5%) were between 40 and 60 years of age and that very few of the patients (2.1%) were under the age of 30 years.

*Clinical data.* Complete clinical data were available for analysis from as few as ninety-one to as many as 146 patients depending on the variable being analysed. Almost 50% (seventy-one patients) had disease duration of 1–5 years

and barely 15% (twenty-one patients) had diabetes for more than 10 years. One hundred and seventeen patients (80.1%) had non-insulin dependent diabetes mellitus (NIDDM) and twenty-nine (19.9%) were classified as having insulin dependent diabetes mellitus (IDDM). About two-thirds of the patients were judged to have good to fairly satisfactory control, and about one-third were considered to have variable or poor control. The criteria used to assess the degree of control were: how symptomatic the patient was, weight changes, degree of glycosuria based on home urine chart or during clinic visit, and blood sugar value where these were available. Peripheral neuropathy was the most common complication observed, being reported in over half of the patients assessed (Table 2).

*Educational and economic status.* Eighty-five per cent of the patients (119) had either no formal education at all or only elementary schooling (Table 3). Most of them had menial or low paying jobs (Table 4) and this is reflected further in the fact that over three-fourths of these patients claimed to earn less than ₦ 100 ($150) per month (Table 5). Using a scoring system that took into consideration the level of education, type of occupation and the individual level of income, 121 patients (82.3%) were classified in the low socio-economic class; twenty-three (15.6%) were in the lower middle class and 3 (2.0%) were in the upper middle class.

*Social amenities and other conveniences.* The majority of the patients, 139 (94.6%), were urban residents and only eight (5.4%) were rural dwellers. One hundred and thirty-three (90.5%) had access to pipe-borne water, six drew their water from a well and eight used a river or stream. Twenty-three patients (16%) indicated that they did not have electricity supply. Table 6 lists the items of comfort possessed by the patients. The most common material possession was the radio which was owned by 68% of the respondents. One-fourth did not possess any of the items listed. The pit latrine was the most common method for sewage disposal being used by seventy-four (53.6%) of the respondents. It was followed by the flush system which was available to fifty-one patients (36.9%). The pail system (Fig. 1), has

**Fig. 1.** Pail system for sewage disposal used by an insulin dependent diabetic patient.

dwindled considerably in its use (5.1%), and six patients (4.3%) claimed to use the bush.

*Knowledge, attitudes, beliefs and expectations.* In response to the question: what do you think causes diabetes?, sixty-two patients (43.7%) indicated they had no idea and Table 7 lists the interesting spectrum of responses from the others. Only four subjects mentioned insulin deficiency or hereditary factor. Barely 20% admitted that they received detailed explanation about diabetes from the doctor when they were first seen in the clinic (Table 8). However, approximately 85% said that either the health educator, the dietician or a nurse talked to them about their disease (Table 9). When asked certain questions which were designed to probe their expectations and attitudes with regards to the management of diabetes, an encouraging 94.4% (135 patients) felt that the disease could be controlled, a disturbing 22.9% believed that it is curable and, fortunately, only six patients thought that they would need to be treated for only a few years.

*Management and compliance.* A majority of the patients (93%) admitted to having had instructions about diet which they understood and followed. Equally unsurprising, 94% of them also claimed that they complied with the use of their medications. These proportions are most likely an over-estimation. The dilemma of where properly to store insulin, syringes and needles is demonstrated by Table 10, Fig. 2.

*Impact of the disease.* Over 60% of the patients felt that the disease had affected their lives adversely, particularly their work (Table 11). Almost a third also indicated that it had affected their sex life. When asked what agitated their minds most, over 50% indicated the problem of procuring their medications (Table 12). Most of the patients got financial or moral support from their spouses with regards to purchase of drugs and proper preparation of meals. However, five men said that their wives deserted them because of the disease and sixteen female patients claimed that they were forced to leave their husbands' homes!

### Survey of pharmacies

Twelve of the eighteen pharmacists to whom questionnaires were sent, completed them. Nearly all the responders were located in the relatively affluent parts of the city so that they most likely represent the best in drug retailing that is available in Ibadan city. Seven out of the twelve (58%), reported that diabetic patients formed a significant proportion of those who filled out prescriptions with them. All of them answered that they always stocked oral hypoglycemic agents but only seven (58%) indicated that they always stocked insulin. Chlorpropamide (Diabenese) and Glibenclamide (Daonil) were stocked by all the twelve pharmacies, Metformin (Glucophage) was stocked by nine, Tolbutamide (Rastinon) by seven and Gliclazide (Diamicron) by three of them. The survey revealed that protamine zinc insulin (PZI) which is the form of insulin least prescribed for our patients was the type most readily available, being stocked by eight of the pharmacies. Soluble (regular) insulin was stocked by seven pharmacies and insulin zinc suspension (IZS Lente) which is the insulin prescribed most frequently for our ambulatory patients was obtained at six of the twelve pharmacies. Among the reasons given for not stocking insulin were: the need for refrigeration which is made difficult if not impossible by frequent power failure, poor movement of the stock and
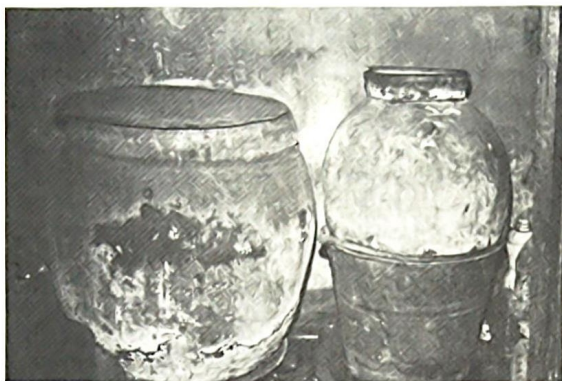
**Fig. 2.** Clay pot for water storage, behind or under which bottles of insulin are kept.

a rate of prescription not commensurate to the capital invested and tied down.

Insulin syringes and needles were available at only five of the pharmacies. Table 13 gives the relative availability of materials for urine testing. A third of the pharmacies did not stock any such materials, and of the six which carried clinitest tablets, half of them did not have the testing kit. Clinistix reagent strip which is not useful for quantitative estimation of urinary glucose was the most readily available.

### Discussion

There are a few studies that have looked into the inter-relationship between the management of diabetes mellitus and the socio-cultural milieu found in most developing countries. In a study from the University College Hospital, Ibadan, Adetuyibi (1976) noted that the majority of the patients belonged to the low socio-economic class and that ignorance about diabetes was rife among them and their relatives. These had dire consequences on the proper use of medications and the performance of home management procedure like urine testing. Olarewaju and Johnson (1982) reporting on their experiences in the Nigerian capital of Lagos observed that there was ignorance about diabetes by the patients and the general public, loss of working hours, frustration of patients in getting insulin syringes and even harassment of patients by the police on grounds of illegal possession of insulin! Lester (1983), in

Ethiopia, commented that insulin and oral hypoglycemic agents are often in short supply and that the cost of drugs was prohibitive. The findings from this study are similar to those of these earlier reports.

The majority of the patients were illiterate or semi-literate at best. Such a situation is bound to have a profound impact on the method for educating such patients and the scope and depth of such an educational process. It is obviously less important to teach about the physiology of the endocrine pancreas than it is for them to know that the disease is neither contagious nor infectious. While some patients hold the view that diabetes is caused by evil-doers or 'bad blood' (Table 7), others have the belief that the disease is curable which may lead to defaulting from the clinic, or that it is contagious which may make them drive out their spouse out of fear of contracting the disease. The perception that the disease is caused by evil-doers has made some patients resort to witchcraft in a search for its cure.

Over 75% of the patients claimed to earn less than ₦ 100 ($150) per month which is less than the government minimum wage of ₦ 120 ($180) per month. In the United States, there are federal medical assistance and financial aid programmes for diabetic patients and the National Health Service completely covers diabetic patients in the United Kingdom and so also do similar programmes in other European countries, Ajgaonkar (1982). In the developing countries, the patients are on their own. Their unfortunate plight is often compounded by loss

of their job. For some patients, the day revolves around several miles' trek to the hospital for insulin injection and a trek back home. Their sustenance then depends on help from spouses and other family members and this is where the African extended family system proves to be of advantage; but it tends to spread the hardship around. Olarewaju and Johnson (1982) reported depression and a sense of isolation in some of their patients.

Less than half of those who were administered insulin injections at home had a refrigerator in which to keep their insulin (Table 10). Those who were not so fortunate found the best possible alternatives but it is not known just how well insulin retains its potency under such conditions (Table 10, Fig. 2).

The availability of antidiabetic medications seems to be a problem in most developing countries (Adetuyibi, 1976; Ajgaonkar, 1982; Lester, 1983; Olarewaju & Johnson, 1982) but it appears to be less acute in a few countries like China which have acquired the capacity to manufacture the drugs locally and have also learned to use traditional medicinal herbs, Zhi-Sheng (1982). Procurement of drugs at affordable prices was a serious problem for most of our patients. Many would wait in line at the hospital pharmacy (where the cost is subsidized) for almost a whole day, at the end of which they may be told to come back another time. If they are lucky, they may be provided with 1–2 weeks' supply of drugs although the doctor may have given an 8-week return appointment. For the remaining 6–7 weeks, the patient must get the drugs from outside pharmacies where they may not be available at all or they may be too costly. Although there is no accurate census of all pharmacies in the city of Ibadan, there are probably fewer than fifty serving a population of over 2 million people.

If there is anything that is certain, it is that there will be no easy solutions to all these problems. The fact that international bodies like the International Diabetes Federation (IDF) and the World Health Organization (WHO) have identified the question of diabetes in the developing countries as a special problem is a significant development in itself and this can serve as a rallying point for future efforts. The problems must be tackled on several fronts and the following are but a few suggestions as to possible short-term and long-term solutions.

(i) One would hope that a steady (even if slow) progress will be made over the coming years with regards to improvement in the social and economic status of peoples of the developing world.

(ii) The size of the problem in individual countries must be defined because this is what will determine the amount of resources which will need to be committed. What this means is that all practitioners in developing countries and in particular, those closely involved in the care of diabetic patients must maintain a reliable register of all diabetic patients being seen in their locality. In addition, those engaged in research may have to carry out epidemiologic studies to determine the prevalence of the disease. Armed with such data, health care providers may be able to convince their government to commit more resources towards the care of these patients because as of now most governments are totally oblivious of the plight of diabetic patients.

(iii) There is a need to consider the training of a class of health care workers who will share the burden of caring for these patients given the acute shortage of physicians. Qualified nurses given extended training on diabetes will serve this purpose very well and they may be designated Diabetes Nursing Providers. They will be particularly useful in the rural areas although they will serve equally admirably in urban centres. Their responsibilities will include: teaching about all aspects of diabetes; diet, insulin administration, skin and foot care, giving injections to those otherwise unable to do so, procuring medications for patients, home visits, and census taking. Details about the curriculum for training, duration of training, approval of such workers by governments and their integration into the health system will still need to be worked out but there is no doubt that such a cadre of health care providers will be needed in developing countries.

(iv) At the minimum, governments should be prevailed upon to remove all disincentives to the importation of adequate quantities of drugs into their countries. Also, as suggested by Adetuyibi (1976) admission into government hospitals should be free for these patients, as it is for those with tuberculosis or cancer.

(v) Drug companies involved in marketing anti-diabetic drugs to developing countries should honestly reassess their policies and

practices. All these drugs cost several times more in developing countries than they do in the developed ones. The companies no doubt could market their drugs at much lower prices and still get reasonable returns on their investment.

(vi) Since it is not certain that most governments in the developing countries will commit more funds towards the care of diabetic patients, the patients themselves must organize into clubs or associations and then try to solicit financial assistance both internally within their countries and from outside sources. Such funds can be used to make bulk purchase of drugs which can then be provided at cheaper rates to the members. Health care professionals must help the patients in organizing these clubs. The experience of Dr F. T. Lester at a clinic in Addis Ababa, Ethiopia, which was recently reported should serve as an example of how private concerns can be of help, Assal (1983). At the University College Hospital, Ibadan we have also started to explore ways and means to implement some of the above suggestions. For instance, our diabetic patients have been organized into an association and they now make a bulk purchase of their insulin from drug companies and then sell to their members at a cheaper rate than is available at outside pharmacies.

There is some hard work ahead for those involved in the care of diabetic patients in the developing countries, and it would be wise to start to apply the energy towards finding the necessary solutions now, before the problems become overwhelming.

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## Appendix

**Table 1.** Outline of subjects covered in the questionnaire*

| | |
|---|---|
| General | Name, sex, age, number of children |
| Clinical data[†] | Type of diabetes, duration, severity, degree of control, complications |
| Educational and economic status | Level of education, occupation, income, social class |
| Social amenities | Water supply, electricity, sewage disposal method |
| Knowledge of diabetes | Instructional education, attitudes, beliefs |
| Management and compliance | Diet, drugs, cost, storage of insulin, syringes, needles |
| Impact of the disease | Physical, emotional, economic |

*Complete detailed questionnaires available on request.
[†]This information was extracted from the patients' charts after the interviews had been completed.

**Table 2.** Frequency of complications of diabetes mellitus

| Complication | Number | Percent |
|---|---|---|
| Vascular | 1 | 1.1 |
| Retinopathy | 3 | 3.3 |
| Cataract | 16 | 17.4 |
| Neuropathy | 47 | 51.1 |
| None | 38 | 41.3 |
| Total | 91 | — |

**Table 3.** Distribution of levels of education attained

| Level | Number | Percent |
|---|---|---|
| None | 67 | 48.2 |
| Elementary education | 52 | 37.4 |
| Modern school | 3 | 2.2 |
| Arabic education | 4 | 2.9 |
| Secondary less than class 5 | 5 | 3.6 |
| Secondary up to class 5 | 1 | 0.7 |
| Polytechnic | 1 | 0.7 |
| Advanced teacher training | 6 | 4.3 |
| University education | 0 | 0 |
| Total | 139 | 100 |

**Table 4.** Occupational status of patients

| Type of occupation/status | Number | Percent |
|---|---|---|
| Unemployed | 18 | 12.8 |
| Farming | 5 | 3.6 |
| Retail trading | 19 | 13.6 |
| Petty trading | 24 | 17.1 |
| Housewife | 3 | 2.1 |
| Tailoring | 5 | 3.6 |
| Food seller (cooked meals) | 5 | 3.6 |
| Clerk/typist | 6 | 4.3 |
| Professional driver | 5 | 3.6 |
| Teaching | 6 | 4.3 |
| Civil servant | 4 | 2.8 |
| Pensioner or Retiree | 8 | 5.7 |
| Others* | 32 | 22.8 |
| Total | 140 | 100 |

*Bread baking, house-painting, hairdressing, welding, carpentery, clerical, plumber, weaver, bricklaying, driving instructor, security guard, domestic help, arabic teacher, cook, cashier, bicycle repairer, prophet.

**Table 5.** Individual income levels

| Income | Number | Percent |
|---|---|---|
| Nothing earned | 33 | 25.2 |
| Less than ₦ 25/month | 25 | 19.1 |
| ₦ 26–₦ 50/month | 26 | 19.8 |
| ₦ 51–₦ 100/month | 18 | 13.7 |
| ₦ 101–₦ 200/month | 19 | 14.5 |
| ₦ 201–₦ 500/month | 9 | 6.9 |
| ₦ 501–₦ 1000/month | 1 | 0.8 |
| Total respondents | 131 | |

*N 1 (1 Naira) = US$1.5 (mid-1982 exchange rate).

**Table 6.** Types of material possessions owned*

| Possession | Number | Percent |
|---|---|---|
| Bicycle | 4 | 2.7 |
| Motor cycle | 8 | 5.5 |
| Automobile | 18 | 12.4 |
| Stereo set | 26 | 17.9 |
| Refrigerator | 33 | 22.7 |
| Television | 53 | 36.5 |
| Radio | 99 | 68.3 |
| None | 36 | 24.8 |
| Total respondents | 145 | |

*Some individuals owned more than one item.

**Table 7.** Q: What do you think causes diabetes?

| Response | Frequency | Percent |
|---|---|---|
| Inherited disease | 4 | 2.8 |
| Lack of insulin | 4 | 2.8 |
| Infections | 4 | 2.8 |
| Supernatural forces | 4 | 2.8 |
| Evil-doers | 8 | 5.6 |
| 'Bad blood' | 10 | 7.0 |
| Taking too much sugar | 28 | 19.7 |
| Others* | 18 | 12.7 |
| 'No idea' | 62 | 43.7 |
| Total | 142 | 100 |

*Allergic reactions, malaria, old age, anxiety, worms, blood donation, God's will.

**Table 8.** Q: At your first clinic visit, what explanation did the doctor give you?

| Response | Frequency | Percent |
|---|---|---|
| None at all | 53 | 37.8 |
| Said something about sugar | 60 | 42.8 |
| Gave detailed explanation | 27 | 19.3 |
| Total | 140 | 100 |

**Table 9.** Q: Which other health personnel talked to you about your disease?

| Personnel | Frequency | Percent |
|-----------|-----------|---------|
| Health educator | 52 | 42.3 |
| Dietician | 43 | 34.9 |
| Nurse | 10 | 8.1 |
| None | 18 | 14.6 |
| Total respondents | 123 | |

**Table 11.** Impact of diabetes on patients' lives

| Impact | Number | Percent |
|--------|--------|---------|
| Tiredness affects work | 48 | 37.5 |
| Business suffered reverses | 9 | 7.0 |
| Life has been ruined | 4 | 3.1 |
| Social life affected | 6 | 4.7 |
| A source of financial drain | 4 | 3.1 |
| School attendance affected | 2 | 1.6 |
| Others | 7 | 5.4 |
| No significant impact | 48 | 37.5 |
| Total | 128 | 100 |

**Table 10.** Q: Where do you keep your insulin?

| Response | Number |
|----------|--------|
| In personal refrigerator | 9 |
| In friend's or neighbour's | 6 |
| Under a clay pot | 4 |
| In a cupboard | 3 |
| Total | 22 |

Twenty-nine patients had IDDM.

**Table 12.** Q: What problems agitate your mind most?

| Response | Frequency | Percent |
|----------|-----------|---------|
| Attitudes of hospital clerks and aides | 6 | 4.4 |
| Long wait for drugs at pharmacy | 19 | 14.1 |
| Difficulty in getting drugs to buy | 24 | 17.7 |
| High cost of drugs | 26 | 19.2 |
| Interruption of work | 11 | 8.1 |
| Always having to cope with the disease | 3 | 2.2 |
| Others | 10 | 7.4 |
| No problems at all | 56 | 41.5 |

**Table 13.** Q:Which of the following materials for urine testing do you stock?

| Materials | Frequency | Percent |
|-----------|-----------|---------|
| Clinistix reagent strips | 7 | 58 |
| Clinitest tablets | 6 | 50 |
| Clinitest urine kit | 3 | 25 |
| Testape | 1 | 8.3 |
| Rapignostic diabetic profile | 1 | 8.3 |
| Bililabstix | 1 | 8.3 |
| None | 4 | 33 |
| Total respondents = 12 | | |