Aidsnet Newsletter
THE DANISH NGO NETWORK ON AIDS AND DEVELOPMENT

Issue No. 15 – January 2009

DIABETES - what has that got to do with HIV/AIDS?

Africa's New Epidemic

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This newsletter explores the interconnection between HIV/AIDS and diabetes, both medically as well as socially.

Introduction

Mortality and morbidity from HIV and its complications have dramatically declined since the advent of combination antiretroviral therapy in 1986 (Diabetes Care 2008). Benefits include suppression of viral load, improvement in CD4 lymphocyte counts, decrease in the number of opportunistic infections and lengths of hospital stay, as well as reduction in AIDS related mortality. Antiretroviral therapy has thus dramatically improved the life of millions of people infected with HIV. UNAIDS estimates point to a 2, 1 million people having access to antiretroviral drugs in sub-Saharan Africa today[1]

However, while the possibility of offering life sustaining treatment is an enormous progress and benefit for all individuals infected with HIV, their families and their communities, advantages do also present a risk of developing adverse side effects of the medication given. Side effects can best be explained by being unintended effects of a drug and are also called adverse effects or toxities. Some side effects are more serious than others and some are even deadly if not treated.[2] Diabetes is one of the more serious diseases that can occur as a side effect to ARV treatment.

Relevance to NGOs

This time Aidsnet has chosen to focus on the interconnection between HIV/AIDS and diabetes in developing countries in order to inform about the risk or unintended side effects that can occur as a result of the increasing use of HAART in Sub-Saharan Africa. ARVs have, as it will be explained in this newsletter shown to contribute to the rising prevalence of another chronic disease, namely diabetes. It is thus important to analyse and discuss the wider implications for the increasing amount of people suddenly ending up with two chronic diseases; HIV and diabetes to ensure that both health professionals and HIV/AIDS programmers in development organisations actively can take correct measures to assist individuals and families in this situation.

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1 (*Source*:http://data.unaids.org/pub/GlobalReport/2008/JC1511_GR08_ExecutiveSummary_en.pdf).

2 All medication can cause side effects, which can be anything from a small inconvenience to a major problem *Source:* Antiretroviral (ARV) treatment Fact Sheet 05 Side effects of ARVs-Summery. http://www.aidsalliance.org/graphics/secretariat/publications/FS05_Side_effects_summary_2007.doc.

To date not many Danish NGOs are currently involved with distribution of ARVs but are to a large extent involved in different activities concerning VCT and insuring of referral mechanisms and improved access to health care, where this knowledge may be of critical importance. It is therefore the hope that Aidsnet can contribute to an increased focus on the link between the two diseases. It is also the hope that this newsletter can contribute to pushing for a broader perspective on fighting diseases than the strict focus on just one individual disease, HIV/AIDS – An increased recognition of the need to apply integrated and crosscutting approaches that works to eliminate the different factors that acts as mutual risk factors will be increasingly needed in the future.

Physicians and nurses and other health care personnel working directly with HIV/AIDS therefore need to be aware of the adverse metabolic effects of the expanding possibility for ARV distribution. The same go for programmers and volunteers working with HIV/AIDS program delivery in developing countries. Knowledge about ARV induced adverse effects and actions to avoid and diminish these need to be included in counselling, care and other activities related to HIV/AIDS programmes otherwise the benefits of the progress reached in connection with treatment possibilities for HIV/AIDS will instead be replaced by another major deadly disease.

"*Surely, we need to make sure and in close collaboration with our partners that our programs and treatment/counselling messages are both relevant and updated and do not oversee anything that could add extra burdens on individuals and families already overstretched by being infected and affected by HIV/AIDS*" Sita Michael Bormann, Save the Children Denmark says.

By Anil Kapur, MD Managing Director World Diabetes Foundation

Traditionally infectious diseases contributed to the bulk of the morbidity and mortality, of late chronic non-communicable diseases (NCDs) are over taking communicable diseases in all but the low income countries, especially in Sub-Saharan Africa where also, according to the World Bank NCDs, will account for over 50% of deaths by 2015. Societies and economies in rapid transition show these changes most visibly; here lifestyles and culture are quickly catching up with the changing landscapes and new economic realities.

Regional Estimates of Diabetes (20-79 age groups)

Regions	No of people with Diabetes (Millions)		Increase
	2007	2025	
African Region	10.4	18.7	80.1%
Mediterranean and Middle East Region	24.5	44.5	81.4%
European region	53.2	64.1	20.6%
North American Region	28.3	40.5	43.4%
South and Central American region	16.2	32.7	101.7%
South East Asien Region	46.5	80.3	72.6%

This change is bringing about rapid epidemiological transition in the disease burden. Diabetes has emerged as a major public health problem all over the world but is particularly impacting the developing

world especially in urban areas. Genetic susceptibility, better early life survival and increased longevity,

coupled with rapid urbanisation and changes from traditional lifestyles are to blame for the epidemic of

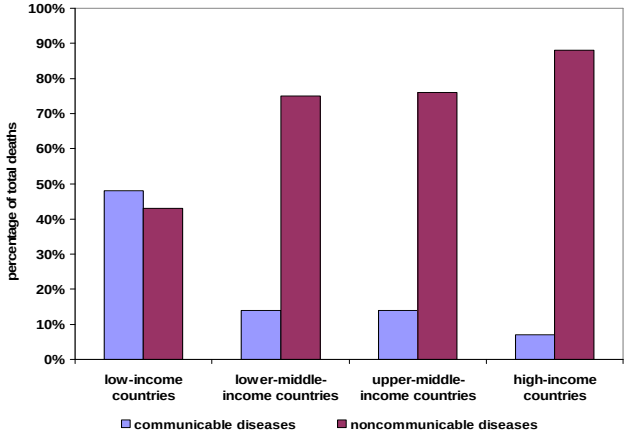
obesity and diabetes (aptly called **diabesity**). Other factors such as foetal programming due to maternal malnutrition, particularly protein and micronutrient deficiencies are also believed to contribute significantly to the high rates of diabetes in children born of such pregnancies in the low and medium income transition economies. These babies born small and thin have significantly higher abdominal fat deposits (thin-fat babies). These babies have been programmed to survive in less and when exposed to even normal nourishment or when over nourished with calories during infancy and early childhood, they develop anthropometric and biochemical markers of metabolic syndrome and consequently an increased risk of diabetes, impaired glucose tolerance, arterial hypertension, coronary heart disease, lipid abnormalities and stroke in adult life, often prematurely. This may partly explain the rapid increase in diabetes being seen in the developing world.

Every 10 seconds one person dies due to diabetes related complications (3.8 million/year) and in the same ten seconds two new people develop diabetes (7.0 million/year). According to the new data from the International Diabetes Federation diabetes already afflicts 246 million people in the world. It is estimated that by 2025 this number is likely to exceed 380 million. Seven out of the top ten countries with diabetes are in the developing world and 80% of people with diabetes in a few years will be living in poor and middle income countries.

Global Deaths by Cause;

HIV/AIDS	2.6 mill
Diabetes	3.8 mill
Malaria	1.2 mill
CVD	13.4 mill

Diabetes Deaths Sources:
Int. Diabetes Federation. Diabetes Atlas, Third Ed., 2006.
WHO. Global Burden of Disease Project. 2003



Diabetes is a major cause of limb amputations, is becoming the leading cause of acquired blindness, in addition to the being the major cause for end stage renal disease, coronary heart disease, strokes etc.

THE AFRICAN SCENARIO

Africa is expected to see a near doubling of the number of people with diabetes in the next 15 years. In many countries in sub-Saharan Africa such as Kenya the prevalence of diabetes in the adult population is estimated to match or even be higher than that of HIV/AIDS.

The need to prioritize distribution of limited health resources, results in a public health-care system that tends to concentrate on the care of people with acute emergent illnesses or for communicable diseases such as HIV/AIDS; malaria and tuberculosis where program funding through health related development assistance or donations from large philanthropic organisations are readily available. While such

compartmentalised vertical funding programs have achieved remarkable successes in controlling some of these communicable diseases, in the setting of low capacity they have also utilised most of the available human health resources at the detriment of other health problems. This approach needs to be challenged as at best it is non efficient and at worst discriminatory. There are numerous examples where a hospital in Africa may have a functioning auto analyser which can be used only to test blood samples including blood sugars and lipids of people with HIV/AIDS but not for a gravely ill child or adult with diabetes!!!

Given the limited funds and infrastructure for chronic non-communicable conditions like diabetes, the quality of care suffers: public hospitals and clinics providing subsidized or free care are crowded and ill-equipped. Insurance cover and cost-reimbursement for treatment in the private sector is marginal or nonexistent; here too the infrastructure for chronic care is limited and the focus is on revenue generating tertiary care. There are either no or few programs for health promotion and prevention of chronic non-communicable diseases. Need for economic development and market economy often overrides health issues in policy planning.

In 2006, a total of 24.7 million people in Africa were estimated to be infected with the human immunodeficiency virus (HIV) and 2.1 million were estimated to have died due to acquired immune deficiency syndrome (AIDS).
By affecting the economically active population in particular, HIV/AIDS is destroying the very fabric of societies throughout the continent. Besides, by affecting (relatively quickly) sizeable adult population, and impoverishing the surviving family, the HIV epidemic may have contributed to a currently lower prevalence of diabetes (relative to similar economies elsewhere) and in general slowing down the growth of non-communicable disease burden in Africa.

The use of antiretroviral combination therapy (or highly active antiretroviral therapy, HAART) has dramatically improved the life expectancy and well-being of people infected with HIV. Recently, the introduction of HAART in developing countries particularly in sub-Saharan Africa with high prevalence of HIV has been recognized as a public health priority. This has resulted in significant reduction in the price of antiretroviral drugs, increased donor funding, and enhanced political commitment – as demonstrated by, for instance, the World Health Organization (WHO)'s '3 by 5' initiative. As a consequence the number of people with access to HAART in sub-Saharan Africa is estimated to have increased 10-fold over the last three years, currently covering approximately one third of those in need.

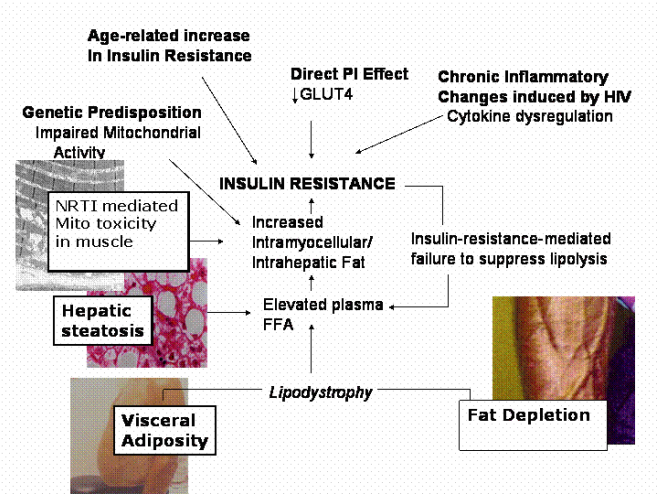
For resource-limited countries, WHO has developed simplified treatment guidelines on the public health approach to the delivery of antiretroviral therapy. This is based on a standard first-line therapy, consisting of two nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) plus a non-nucleoside reverse transcriptase inhibitor (NNRTI); and second-line therapy, consisting of a boosted protease inhibitor (PI) with at least one NRTI – with the switch in therapy being guided by the clinical progression of the disease.

ARV Therapy-induced Changes in Glucose Metabolism

To date, by far the most common first-line therapy in sub-Saharan Africa consists of **Lamivudine** (3TC), **Nevirapine** (NVP), and either **Stavudine** (d4T) or **Zidovudine** (AZT). Often, d4T, 3TC and NVP are available in a fixed-dose combination. WHO recommends the use of the fixed-dose combinations, not only because they simplify the drug regimen and improve adherence, but also because they are available at considerably lower prices than branded drugs.[3]

[3] Cipla produces an all-in-one pill called Triomune which contains three substances (Lamivudine, Stavudine and

As a consequence of these drugs, various induced metabolic complications including diabetes, impaired glucose tolerance, insulin resistance, dyslipidemia and the excessive loss of fat beneath the skin (lipodystrophy) – resulting in sunken cheeks, indentations, and hollow eyes, occur more frequently with the use of these ARV therapies.



Source: http://hivinsite.ucsf.edu/InSite?page=kb-03-02-10.

The clinical presentation of antiretroviral-associated diabetes is similar to that of type 2 diabetes, and evidence of islet autoimmunity as seen in type 1 diabetes is distinctly uncommon in patients with antiretroviral- associated diabetes.

Nevirapine). Today (2007), Cipla is the world's largest manufacturer of antiretroviral drugs (ARVs) to fight HIV/AIDS, as measured by units produced and distributed (multinational brand-name drugs are much more expensive. Roughly 40% of HIV/AIDS patients undergoing antiretroviral therapy worldwide take Cipla drugs.

TYPES OF DIABETES

Type I DIABETES: Type 1 diabetes results from cellular-mediated autoimmune destruction of pancreatic islet beta-cells causing the loss of insulin production which leads to absolute dependence on insulin treatment and a high rate of complications typically occurring at relatively young ages. Type 1 diabetes, therefore, places a particularly heavy burden on the individual, the family and the health services.

Type 2 DIABETES: Type 2 diabetes is characterized by insulin resistance and relative insulin deficiency, either of which may be present at the time that diabetes becomes clinically manifest. The diagnosis of type 2 diabetes usually occurs after the age of 40 years although the age of onset is often a decade earlier in populations with high diabetes prevalence. Type 2 diabetes constitutes about 85% to 95% of all diabetes in developed countries, and accounts for an even higher percentage in developing countries. It is now a common and serious global health problem, which, for most countries, has evolved in association with rapid cultural and social changes, ageing populations, increasing urbanization, dietary changes, reduced physical activity and other unhealthy lifestyle and behavioural patterns as previously highlighted.

GESTATIONAL DIABETES: Pregnant women who have never had diabetes before but who have high blood sugar (glucose) levels during pregnancy are said to have gestational diabetes. Gestational diabetes starts when the body is not able to make and use all the insulin it needs for pregnancy. Gestational diabetes affects about 4% of all pregnant women. Without enough insulin, glucose cannot leave the blood and be changed to energy. Glucose builds up in the blood to high levels. This is called hyperglycaemia. Women with gestational diabetes are at increased risk of developing type 2 diabetes mellitus after pregnancy, while their offspring are prone to developing childhood obesity, with type 2 diabetes later in life. Most patients are treated only with diet modification and

moderate exercise but some take anti-diabetic drugs, including insulin.[4]

WHY WORRY ABOUT ARVS?

At the same time as being efficient, ARVs are significantly associated with diabetes. The strongest relationship with new onset diabetes was with exposure to Stavudine. However, exposure to Ritonavir and Nevirapine were both associated with reduced risk!! Focusing almost exclusively on the role of protease inhibitors, elegant studies demonstrated the rapid development of insulin resistance and concurrent impairment of insulin secretion following exposure to these agents. The mechanism of insulin resistance appears to be interference with glucose transport.

WHO IS AT RISK?

The risk factors for insulin resistance and diabetes in patients with HIV infection treated with protease inhibitors include positive family history of diabetes, weight gain, lipodystrophy, older age, male sex, black race and (co-infection) with hepatitis C. (*Source: Diabetes Care, Vol. 31, N0 6, June 2008)*.

The association between protease inhibitors and diabetes was further strengthened by studies showing that switching patients to other regimens improved the hyperglycaemia and hyperlipidemia observed during use of protease inhibitor– containing regimens. Shifting the focus away from protease inhibitors, it has been shown that nucleoside analogs (reverse transcriptase inhibitors) Stavudine, Zidovudine, and Didanosine were associated with significantly higher risk of incident diabetes during long-term follow-up than were other agents, including protease inhibitors (*Source;* De Wit et al.) The increased risk persisted after adjustment for several diabetes risk factors, suggesting a possible direct effect of the nucleoside analogs on glucoregulation. Exposure to Stavudine conferred the greatest risk for incident diabetes (adjusted relative risk per year of exposure 1.19 [95% CI 1.15–1.24]). The data analyzed by De Wit et al. derive from a large international prospective study comprising of 33,389 HIV-infected patients who were followed up for incident diabetes. The database included more than 130,151 person-years of follow-up, and the diabetes end point was rigorously defined and ascertained. A case-control study of type 2 diabetes in HIV-positive patients found that liver damage, as measured by ALT levels, appears to be a unique factor in HIV-associated diabetes mellitus, suggesting that underlying liver pathology may be a marker for, or a predisposing factor of, diabetes. The study, found that BMI and genetic factors were also linked with diabetes, as in the general population.

Marie Louise Jacobsen, MSF Coordinating nurse at HIV Project in Zimbabwe 2006-2007 explains that **Stavudine**, being the drug that has the strongest relationship with new onset diabetes is included in almost all treatment regimes in the field. Also the nucleoside analogs **Zidovudine** and **Didanosine**, (reverse transcriptase inhibitors) also associated with significantly higher risk of incident diabetes, are also used in different combinations and according to needs of the specific patient and according to the availability of drugs.

Marie Louise Jacobsen adds that MSF only uses FDA (US Food and Drug Administration) approved drugs and which can be found on the list of essential drugs in WHO[5].

[4](http://www.diabetes.org/gestational-diabetes.jsp).

[5] The WHO has published a model list of essential medicines. Each country is encouraged to prepare their own lists taking into consideration local priorities.

The WHO List contains a core list and a complementary list. The core list presents a list of minimum medicine needs for a basic health care system, listing the most efficacious, safe and cost-effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment. The compilation of an essential medicines list enables health authorities, especially in developing countries, to optimize pharmaceutical resources. http://www.who.int/medicines/publications/essentialmedicines/en/

"*In Zimbabwe, MSF primarily used FDC = Fixed Dose Combination treatment, which is 1 Line unless there were contra-indications where drugs are then given individually, or there was resistance and we had to resort to 2nd Line",* Marie Louise Jacobsen tells.

"*As a medical organization, MSF is obviously aware of possible side effects of treatment. Starting people on ARVs is a lifelong commitment for the individual - and the same is diabetes treatment, treatment for high blood pressure and other chronic diseases. The problem with HIV is that we are faced with a disease which is "chronic" and contagious. ARV lowers, as we know the virus in the blood volume and thereby reduces the risk of infection by such as unprotected sex, thus ARV treatment provides an essential role in connection with prevention.*"

"*It is definitely a problem that there are side effects of the medication given, especially when they are as serious as an increased risk of developing insulin resistance - but there is unfortunately no alternatives for treatment in the field of generics as far as I know now - MSF continues to work to get the best treatment in the field.*"

"*Now as ART has not been used for a very long time in the field, I don't know if there are any studies telling us whether this increased risk is observed. But, what I can say with certainty is that the lifestyle of the majority of the people we have in treatment is not a positive player for the development of insulin resistance*," Marie Louise Jacobsen ends!!

THE MAGNITUDE OF NEW ONSET DIABETES IN INDIVIDUALS TREATED WITH ARV.

Diabetes has been reported in **2 to 10 %** of people taking anti-HIV therapy, with prevalence growing as time on therapy increases. Recent studies have found that the risk of diabetes is four to five times greater in HIV-positive men on HAART compared with HIV-negative men, three times greater in HIV-positive women on HAART compared with HIV-negative women, and that co-infection with hepatitis C appears to further increase the risk of diabetes in HIV-positive people.

Historically, the nucleoside analogs were among the first agents to be deployed in antiretroviral pharmacotherapy, whereas the protease inhibitors have had the most florid associations with diabetes risk. It is likely that different components of ART regimens might confer individual or additive risks that trigger acute or cumulative diabetes events in the genetically predisposed. Clearly, physicians who treat patients with HIV/AIDS as well as programmers need to be alert to the adverse metabolic effects of the expanding antiretroviral armamentarium.

A small survey made among Danish NGO HIV/AIDS focal points on their knowledge about ARVs ability to cause adverse metabolic effects like diabetes revealed that almost no one knew about this;

ELISABETH RIBER CHRISTENSEN, The Danish Family Planning Association; "*I did not have any knowledge of the risk of developing diabetes when treated with HIV medication. This knowledge is important, but does not have any direct impact on our programmes in IPPF. On the other hand, it is important to make sure that our referral system acts adequately and that our peer educators know these interlinkages and the basic signs of diabetes*."

PETER ROTHE SCHULTZ, Danish Handicap Organizations; "*My knowledge on this is very limited, probably because we mainly work to mainstream handicapped into HIV/AIDS programmes and vice versa and therefore does not relate to the more specific HIV/AIDS related issues*."

Marie Louise, MSF; "*Diabetes is a growing problem, but it is not an area we as an organization is dealing with directly right now. However, we are working very closely together with local health authorities in the*

countries where we are working and are trying to integrate our projects wherever possible in the existing structures. In the case of an individual showing signs of diabetes or is already diagnosed with the disease, there is a strong need to cooperate and coordinate the continuum of care and treatment with effective referral systems which is what we work very hard to achieve at the moment."

Several steps can be taken to assess and potentially reduce the risk of diabetes:

- A routine family history in order to ascertain if any first-degree relatives have diabetes.
- Individuals who are overweight should receive advice and support on how to lose weight to prevent diabetes.
- Individuals with lipodystrophy, HCV co-infection, hepatic steatosis (fatty liver), and/or high triglycerides should be very closely monitored, and ideally, avoid PI-based HAART, or use PIs with a more favourable metabolic profile.
- An oral glucose tolerance test may be a useful tool to assess at-risk patients without symptoms of diabetes.

The hither to widely used vertical compartmentalised approach to prevent and control HIV/AIDS will be increasingly challenged due to the now recognised link between the chronic use of the antiretroviral drugs that are most frequently used in Sub-Saharan Africa and the emergence of diabetes and metabolic syndrome as a consequence of drug treatment. It can be expected that the increasing use of these particular drugs in sub-Saharan Africa will contribute to the rising incidence and prevalence of diabetes and other related NCDs (non-communicable diseases).
Moreover, the increasing recognition of the high risk of smear positive tuberculosis amongst undiagnosed and inadequately treated people with diabetes and the well known association between tuberculosis and HIV/AIDS makes it necessary that public health programs addressing these major illnesses work synergistically. Surprising as it may appear, there are many common shared risks and socio economic determinants behind these major health challenges and addressing them together through a comprehensive health system approach rather than piecemeal, will ensure optimum outcome and utilise scarce health care resources wisely.

Marie Louise Jacobsen, MSF reports that in Zimbabwe MSF did not have people in treatment for diabetes. MSF were only in charge the treatment of HIV positive and focused solely on ART and opportunistic infections in collaboration with the National Health Service.

"But f*or patients with diabetes, it was different; they had to report to a national health service for treatment which was maybe far away. Most HIV projects are as already mentioned carried out in close cooperation with national health organizations and they are the ones who remain responsible for the treatment of chronic diseases and other health problems not related to HIV. If a patient had diabetes, there was obviously taken account of this in relation to the HIV treatment regime but if MSF had a suspicion of new onset diabetes, we had to contact one of the national health clinics for help. However in 2006/2007, this was still not a pronounced problem."*

Introducing a Study in Tanzania

By Mette von Deden

When dealing with diabetes, it is important to stress that diabetes is a relatively "new" disease and the level of knowledge about the disease among populations worldwide is generally poor and many are unaware that they have the disease. Untreated diabetes may be fatal and especially for those living in developing countries where access to health care is limited and health care systems may be overloaded by the burden of communicable diseases.

The following empirical findings presented here build on a two month's anthropological fieldwork in Dar es

Salaam in Tanzania I conducted in February and March 2008 together with Marie Kolling and three post-graduate students from the Department of Anthropology, University of Copenhagen and sponsored by Novo Nordisk. We investigated how people afflicted with type 2 diabetes lived with their chronic illness and the actions they took in order to better their health. In addition to this, individual working papers were produced that unfold different aspects of living with diabetes in Tanzania and those findings useful for professionals working in the field of HIV/AIDS and diabetes and reproductive health and sexuality will be presented here.

DIABETES IN TANZANIA

The East African country Tanzania has experienced a rapid rise in non-communicable and chronic diseases including diabetes. In the 1980s, the incidence of type 2 diabetes was among the lowest in the world. Today the prevalence estimates of diabetes is 909.600 out of Tanzania's 40.2 million people (754.500) in urban and (155.100) in rural populations. This number is expected to increase by 50 percent within the next 20 years (Ramaiya Kaushik 2005, IDF Atlas 2008:14, 40-41).

THE STUDY CONCERNED

Women and men aged 32–65 years of age who had been diagnosed with type 2 diabetes from less than six months ago and up to 30 years ago and who lived in poor urban areas in Dar es Salaam and at the periphery of the city. Only four of the informants were formally employed and many were engaged in more irregular income generating activities such as petty business. However, as a consequence of their illness many did not have the psychical strengths to engage in income generating activities and were therefore completely dependent on the social and economic resources of their family network.

PRIOR TO DIAGNOSIS AND THE FEAR OF BEING HIV-POSITIVE

Some of the first symptoms of type 2 diabetes are fairly similar to those of HIV/AIDS such as extreme tiredness and lack of energy, sudden weight loss, slow-healing wounds, and recurrent infections. This meant that before many had received their diagnosis, many were extremely fearful that they had contracted the HIV-virus. This perception was particular connected to the fact that they had experienced dramatic and sudden loos of weight within a very short period of time. HIV-positives who are in the later stage of their illness also experience a rapid loss of weight. Many typically experience to loose more than 10 pounds of weight as a consequence of HIV/AIDS (UNDP 2008).

From observations, it became clear that sudden weight loss and skinny people in general are often perceived as an obvious sign that the person is infected with HIV/AIDS. The fact that many of our informants thought that they had become HIV-positive, was a very stressful experience for them as revealed in the following focus group interview:

Haamed, (male informant, 26 years of age) says: "*The first stages of my problem given my experiences which are the same for many people, is when they start getting diabetes. You may loose weight drastically. So, when that happens, people start to marginalise you because they think that you are HIV-positive*."

Dacia (female informant age unknown but around 35-40 years of age): "*That is a normal experience that faces almost everyone because as you get that problem the first time the problem, the big body is getting down day after day. There are people who know you start pointing fingers; she has already required the HIV or he has required it*."

Baasu (male informant, 33 years of age):"*That problem is very serious to every diabetic patient. I had the same experience myself, people started to feel that I had HIV status. The good thing is that when it started too remote itself. I went to the clinic and I was told that I had the diabetic problem*."

Q: "*How did you react when people started thinking that you are HIV-positive? Did you take any actions*?"

Baasu: "*When that thing happened at first, it even shocked me. After I experienced that dramatic fall of weight I went to the clinic to take diabetes test and I was told that I had no diabetic problem. So, it shocked me. I am started thinking that what people were thinking was right. I was HIV-positive.*

But, after some time, some one told me that I had every symptom of a diabetic so, I decided to go to the clinic and got tested. Then I was told that I had diabetes."

As told, it was a common experience among diabetics to misjudge their symptom of rapid weight loss for being a symptom of HIV/AIDS. Misconceptions which were reinforced by people in their local communities who accused them of being HIV-positive which made them suffer from HIV-related stigma prior to their diagnosis. Considering weak diagnostics of diabetes in developing countries, if may be reasonable to assume that diabetes HIV-related stigma are a common experience affecting diabetics and especially those living in nations where HIV/AIDS is widely distributed among populations.

DIABETES AND HIV-RELATED STIGMA

A way to avoid discrimination and stigmatisation for my informants was to constantly emphasise their disease's non-infectious character to people in their daily life. When doing that many distinguished between the diseases of diabetes and HIV/AIDS in the same sentence as diabetes being the one that did not transmit and HIV/AIDS as the one that did. This clear distinction was an essential theme for many and had a profound impact on their everyday life. When I asked my informants how their family had reacted when they had revealed their diagnosis, I were told that in situations where they informed their family, friends, colleagues and neighbours about their conditions, one of the first things they mentioned was that diabetes was non-infectious. Being one of the first thing mentioned reveals the seriousness of being a victim of HIV/AIDS discrimination and stigmatisation but equally importantly about diabetics' fear of sharing the same tragic destiny.

The social consequences of being identified as an HIV-positive, was very harmful for diabetics. A female told us that she was discriminated by her husband because he believed that diabetes was infectiousness and she could infect him with the disease as revealed in the following part of an interview:

"**Aisha** (female informant, 46 years of age): "*My husband had discriminated me in a way because when I got sick he left me and asked if the disease was infectious.*[…] *I told him it wasn't and he thought I was lying and that I had been infected by somebody else*."

Q: "*So he was scared of getting it too*?"

Aisha: "*Yes I think so*."

As it is shown in the interview, misconceptions about diabetes had a harmful consequence on Aisha and her marital relationship, as her husband left her because he thought that she had been unfaithful to him and therefore acquired diabetes. Seen from a gender perspective, incidence of diabetes may thus, increase existing inequalities of gender and sexuality in Tanzanian, just as we have seen it being the case for HIV/AIDS.

In spite of experiencing the seriousness of being accused of being HIV-positive, there seem to be a significant difference in HIV-stigmatisation and diabetes-stigmatisation. In the case of diabetes-stigmatisation, once most of the diabetics in our study had assured their family and local community (e.g. neighbours, colleagues, priests) that diabetes did not transmit, many were able to live normally. Their surroundings accepted their illness and labelled it as a "normal" disease which they did not have to fear could infect them. In the case of HIV-stigmatisation it *will never be just another thing* as expressed by PhD candidate at Department of Anthropology, University of Copenhagen Bjarke Oxlund.

Looking at diabetes HIV-related stigma cross-cultural, a Cambodian qualitative study from 2007 by Chean Rithy Men also reveals that many diabetics who experience loosing a lot of weight and become skinny, are stigmatized as HIV-positive (Men 2007:12). Besides experiencing HIV-related stigma, a recent study from Cameroon shows diabetics are stigmatised by their families, peers, communities, employers, healthcare providers and the state and manifested in the form of job, insecurity, conjugal rejections, nutritional prohibitions and restrictions in terms of limited clinical care (Paschal Awah 2008).

TESTING DIABETES PATIENTS AT HIV/AIDS CLINICS

Photo: HIV/AIDS laboratory. CHF International.org

A clear consequence of not being able to recognize the symptoms of diabetes had the effect that many diabetics went to an HIV/AIDS clinic for an HIV-test because they thought that they had acquired the HIV-virus. This often prolonged the process of getting an appropriate diagnosis. In spite of their signs of diabetes, health professionals at the HIV/AIDS clinics did not detect their illness symptoms. This was not only restricted to health professionals working in HIV/AIDS clinics but also within other areas of the health care system. A possible harmful consequence of this phenomenon is illustrated in the following part of an interview with Junior Professional Officer Marlene Krag Petersen from the Tanzanian Ministry of Health:

"It is *known in Tanzania that due to the symptoms resembling those of HIV and AIDS, people are afraid that they might suffer from HIV. Then they get tested for HIV and go home afterwards, some and in particular type 1 diabetics die before you find out that it wasn't AIDS but actually it was because they were dying from diabetes*."

As revealed in the interview, people with diabetes risk dying from untreated diabetes because they believe that they have HIV/AIDS and then attend HIV clinics for an HIV-test and the health professionals do not detect their symptoms of diabetes which may have fatal consequences for the diabetic patients. It is important to take into consideration that knowledge on diabetes health care professionals working outside the field of diabetes is generally limited in Tanzania as many are not trained to detect symptoms of diabetes.

OVERLOOKED AS A PATIENT GROUP

In Tanzania diabetes medicine[6] is costly and unaffordable for many to buy. Additionally, Tanzania has had a nationwide shortage of insulin which means that many diabetics are forced to buy their medicine at private pharmacies at a very high cost (Ministry of Health 2008). Therefore, many diabetics attend traditional healers who tell them that they can cure diabetes. This may have fatal consequences for many diabetics as they risk dying of untreated diabetes.

The inaccessibility of diabetes medicine for many made them feel extremely overlooked as a patient group and even more so when comparing their life situation to those suffering from communicable diseases such as HIV/AIDS and tuberculosis who received their medicine without costs. Many expressed they did not understand why they could not receive free medication as their disease was deadly too if not treated, as illustrated in the home interview:

Calandra (female informant, 54 years of age) *[…]"we people with diabetes especially us who come from poor households need to be treated and taken care of just the way you take care of people who suffer from the tuberculosis and HIV-*

[6] The commonest medicines used are: chlorpropamide (250 mg),glibenclamide 5 mg od,metformin 500 mg, Lente insulin and actrapd insulin (Ramaiya, Kaushik 2008).

AIDS problems. These people are given free treatments which we also would like to have because even our disease is not curable […].

That diabetics were not taken as serious as people suffering from communicable diseases was also a widely held view among the diabetics' family members who constantly expressed the need for free medication. It may be because we were the link between them and the medical company who produced their medicine. Nevertheless, it was very clear that this was a pressing need for the diabetics and their families.

Men's Cambodian qualitative study:"*I wish I had AIDS* shows that diabetics in Cambodia would rather have HIV/AIDS then diabetes as they do not receive the same benefits in terms of free medicine and thus, have greater risk of dying from their chronic illness compared to HIV-positive (Men 2007).

NOT ENOUGH FOCUS ON NON-COMMUNICABLE AND CHRONIC DISEASES

That too many resources and political attention were converted into communicable diseases compared to non-communicable and chronic diseases in Tanzania, was also a view that was widely held among much health professionals and policy makers. Many expressed the need for an increased focus on the seriousness of the current burden and future incidence estimates of diabetes were taken into consideration in health interventions. Several health professionals also expressed great frustrations concerning their patients' lack of access to affordable medicine which they knew could have fatal consequences of them. From spending time in Tanzania and doing observations, it was obvious that communicable diseases and especially HIV/AIDS received much more political attention and foreign funding compared to the non-communicable and chronic diseases. For instance, at the time of our fieldwork president George W. Bush visited Tanzania to announce that the United States was going to fund communicable diseases in Tanzania. When moving through the city's heavy traffic, you could not help but noticing the huge billboards all over the city expressing the need to prevent HIV and AIDS and other communicable diseases. Not a word was mentioned about the burden of diabetes. From observations at diabetes clinics, it was equally clear that communicable disease received more attention and funding. The diabetes clinics consisted of yellow painted metal containers supplied with a cover and wooden benches as a waiting area. While waiting for consultations, diabetic patients could look across the street at see the brand-new huge and shinny buildings of HIV and AIDS clinics sparkling in the air. Even through many important initiatives are taken in order to prevent and treat diabetes in Tanzania my above description can be seen as a symbol of the current political will to do something about the diabetes epidemic nationally and internationally.

DIABETES AND MALE IMPOTENCE

Abnormal blood glucose levels are anticipated to be a significant health also concern in connection with sexual and reproductive health.

In particular, sexual dysfunction like male impotence is witnessed as a complication to diabetes because of vascular obstruction and nerve damage causing e.g. erectile failure.[7] Unfortunately sexual dysfunction is often regarded as a silent complication. Even the Diabetes Atlas, a source to information on diabetes; http://www.eatlas.idf.org/ has not listed male impotence very high on their list of complications. The same goes for the WHO "Diabetes action now" report where male impotence is only indirectly mentioned on the list of complications. This can probably been explained by its tabooed character. The consequence is that male impotence is therefore not a very high priority area for intervention and can thus become a source of additional frustration.

[7] http://www.nature.com/ijir/journal/v15/n3/full/3900998a.html.

To many African men, sex and many sexual partners is important for the construction of masculinity. The reason for this can partly be found in the fact that many African men often tend to compensate difficult socio-economic changes and lacking social status threatening their masculine identities with sexual accomplishments and 'real man'-behaviour when trying to confirm their masculine identity. (Silberschmidt 2004:246, Morrell 2001: 27)

According to Bjarke Oxlund, speaking from a Rwandan point of view, impotence may prevent a man from being accepted as a full human being in society. When a man is impotent and becomes weak, he may fail to live up to the defining features of manhood, which is to be able to have kids, build a family and support it. Since an erect penis serves as the main symbol of male power, impotence may change the social dynamics of a household, since an impotent man suffering from poor health may suddenly become the weak part in a relationship and may find it difficult to demand or earn respect. The social expectations towards a man and the social consequences he is likely to suffer in case of impotence, are very clearly revealed by a mid-aged women who was interviewed as part of an ADRA –implemented program in Rwanda:

"*What makes a real man are those tangible things and extra duties. He must be able to have sex and produce children. Otherwise, he is not a man and not worth anything. Your mind cannot be stable if you can't have sex. A real man starts building a house and then he brings a wife. They have sex and produce children and he can manage. If he can't do sex, he can't succeed in other things*."

The empirical findings by Marie Kolling from the fieldwork in Tanzania concerning diabetes and how urban poor cope with the illness shows that for men who are afflicted with diabetes and suffer from impotence, the illness experience is heavily influenced by the impact of impotence on their sexual health and the challenges this poses to their gender identity and gender power relations. Sexual dysfunction may indeed have severe consequences for marital relations and may result in men being deserted by their wives on that account.

It was one of the key informants, Hasani, 33, a husband and father of 2 children, who brought to attention the problems of diabetes and impotence. When asked how diabetes had affected his life, his relation to his wife and problems with his sex life was clearly of primary concern. In the following account he explains how this unfolds in his daily life:

"This problem has really affected me. For example, when it happens that I'm very sick and just resting at home while my wife every day goes to work and returns at home still to find that I am just there, and especially when our home savings get finished in the house, she may speak some words that I don't like. She even speaks some despising words. So such kinds of words to me as a man are not good. So I think this problem has really affected me."

Later in the same interview Hasani expressed how, in fact, the social consequences of suffering from impotence, was of such great concern that it worsened his physical condition:

"It worries me by about 95%, it really worries me to the extent that sometimes I may be normal but when I start thinking about the fate that might arise between me and my wife, my situation starts worsening."

Research shows that in East Africa men's gender identity, self-confidence, and social value is linked to their sexuality (Silberschmidt 2003, 2005). In light of this, the story of the informant, Hasani, raises a question of how men aspire to manifest their masculinity, if a man's earning powers is central in construction of masculinity and they are unable to support their household, and if sexual performance is at the core of masculinity and they suffer from impotence. Undoubtedly there is a lot at stake for men in such a situation.

DIABETES COSTS – A BURDEN FOR FAMILIES AND SOCIETY

BY SUSANNE OLEJAS

Because of the chronic nature of the disease, the severity of its complications and the means required to control them, diabetes is as described throughout this newsletter a human as well a financial costly disease. Mechanisms for financing health care are non-existent in most developing countries and health costs therefore typically represent out-of-pocket expenditure. In many instances, the choice is between health care and food or clothing, and such financial constraints inevitably result in under-consumption of health care services. According to WHO, 80% of people in developing countries pay directly for some or all of their own medicine. In Latin America, families pay 40-60% of diabetes care costs out of their own pockets. For a low-income Indian family with an adult with diabetes, as much as 25% of family income may be devoted to diabetes care.

In 2007, the world will spend an estimated 215-375 billion USD to care for diabetes and its complications. For comparison, a $10 billion in 2007 is spent on AIDS (*Source*: UNAIDS 2008). If nothing is done over the next 20 years, the figure will rise to between 234 billion and 411 billion USD. Diabetes is growing fastest in low- and middle-income countries. It is therefore the developing countries that will bear the brunt of the spiralling costs.

In developing countries, the prevailing poverty, ignorance, illiteracy and poor health consciousness further add to the problem. Those who cannot afford or do not have access to even bare minimum health care facilities are likely to be diagnosed late and suffer from diabetes-related complications (because of delay in diagnosis and/or improper treatment). Furthermore, many people with type 1 (i.e. insulin dependent) diabetes die before they are diagnosed, or soon after diagnosis, due to inadequate access to treatment. (*Source:* IDF, Diabetes Atlas, 2nd and 3rd edition November 2006).

Photo: Novo Nordisk's chief executive, Lars Rebien Sorensen [left], talks to a doctor about one of her patients
*SOURCE:*http://www.telegraph.co.uk/money/main.jhtml?xml=/money/2007/07/03/ccafrica103.xml

FUNDING OPPORTUNITIES AND CONTROVERSIES

Novo established the Foundation with $100m (£50m) to tackle the emerging crisis of diabetes in poor countries, which is growing because of changes in diet and lifestyle. The World Diabetes Foundation (WDF) , a private fund set up in 2002 by Denmark's Novo Nordisk to support prevention and treatment of diabetes in developing countries. The Foundation is in addition acting as a catalyst to build relations among different stakeholders such as governments, diabetes organisations, hospitals and authorities in order to ensure continued existence of diabetes initiatives after the completion of the World Diabetes Foundation funded projects. The World Diabetes Foundation is working hard to put pressure on the World Health Organisation and private funders, such as Bill Clinton's Foundation to co-ordinate fighting Aids with tackling the rapid growth of diabetes in developing countries.

Lately, The Global Fund has shown a broader perspective on fighting diseases than focusing strictly on HIV/AIDS, TB and Malaria which means that their funding can also be used for general health systems strengthening - representing a broad, integrated approach to strengthening health systems rather than a specific, vertically focused approach on individual disease areas, recognizing that there are cross-cutting

concerns and the disease areas (infectious / not contagious) play against each other (for example, patients on ART who develop the metabolic syndrome or type 2 diabetes as a side effect of medication or diabetes, which also acts as a risk factor for TB!) However, there are still huge gaps in funding mechanisms and in programmes addressing the massive disease burden of both infectious and non-infectious diseases as interlinked and crosscutting issues that must be addressed in the coming years in order to ensure optimum health for individuals and to be able to utilise scarce health care resources wisely in developing countries!

Photo: Novo Nordisk's diabetes clinic Muhimbili National Hospital in Dar Es Salaam, Tanzania.

WHAT TO DO – SOME RECOMMENDATIONS FOR NGOS

Innovative interventions will remain a major source of help for people living with both HIV/AIDS and diabetes and call for new and adapted approaches.

- Provision of information on the risk of developing adverse side effects as a result of ARV regimes.
- Better coordination of actors (health care providers and different support groups).
- Assistance to better designed solutions to diminish barriers to access to care for chronic diseases.
- Assistance to increase the implementation of a broader and integrated approach to act on different health threats in parallel (e.g. diabetes testing at HIV/AIDS laboratories).
- Better counselling on the importance of adequate and correct nutrition highly benefitting both diseases taking current changes from traditional lifestyles into more modern and western inspired lifestyles into consideration.
- Work towards an integrated, holistic approach to care (HIV, diabetes or other care) and towards a situation where health care personnel are better trained and with a broader perspective so that possible side effects / complications of treatment regimes will also be picked up and cared for.

As Ib Bygbjerg, Board member of the World Diabetes Foundation puts it; "*it would be nice not only to focus on ART keeping people alive but also to start looking to see if the treatment given contributes to the death of people because of side effects* "….

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