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CONTENTS

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## ORIGINAL ARTICLES

- Quantifying morbidity in pregnant women in a rural population in Tsholotsho district in Zimbabwe ..... PLN Sikosana, D Hlabangana, I Moyo ..... 93
- Guillain Barre Syndrome (GBS): an appraisal ..... S El Zunni, PS Prakash, I Busnaina ..... 99
- Sentinel surveillance identifies a high HIV prevalence in a rural population in Zimbabwe ..... M L'Herminez, MT Mbizvo ..... 103
- Clusters of measles outbreaks in a special group of the Midlands province, Zimbabwe ..... LK Shodu, DG Dhlakama, C Zishiri, CS Zvavamwe, E Makhulumo ..... 107
- Risk factors associated with contracting dysentery during *Shigella dysenteriae* type 1 outbreak in Harare, 1993 ..... KS Mwenye, N Gumbo, M Mavela, D Peterson, S Siziya, G Woelk ..... 111
- Alteration of paracetamol pharmacokinetics in BALB/C mice infected with *Schistosoma mansoni* ..... S Mukanganyama, YS Naik, JA Hasler ..... 113

## CASE REPORTS

- Successful management of ectopic pregnancy with a single injection of methotrexate: a case report ..... A Krolikowski, K Janowski, Z Hordynska, JV Larsen ..... 116
- Tubulo-interstitial and glomerular changes in the case of Denys-Drash Syndrome ..... EJ Lancaster, L Banach ..... 117
- Pleomorphic lipoma — an unusual variant of lipoma that may be misdiagnosed as liposarcoma ..... BJ Olasode, E Agbakwuru, WO Odesanmi ..... 119

## BOOK REVIEWS

- Otolaryngology in Asian countries, edited by S Prasansvk, A Na Nakorn, C Bunnag, C Siriyananda ..... CG Tumushime-Buturo ..... 121

# THE CENTRAL AFRICAN JOURNAL OF MEDICINE

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## ORIGINAL ARTICLES

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### Quantifying morbidity in pregnant women in a rural population in Tsholotsho district in Zimbabwe

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**Objective:** To quantify the extent and type of morbidity experienced by pregnant women in a rural population in Zimbabwe.

**Design:** A follow up study in which pregnant women were enrolled into the study and followed up monthly to elicit history of illness and other similar events during the course of the pregnancy. Seroprevalence studies were also conducted.

**Setting:** Tsholotsho district in Matebeleland North Province in Zimbabwe.

**Subjects:** 171 pregnant women.

**Main Outcome Measures:** Incidences of disease conditions or illnesses experienced during pregnancy, seroprevalence of TORCH, Hepatitis B, HIV antibodies, Hb levels and syphilis.

**Results:** Seroprevalence was determined in 164 serum specimens from the pregnant women. Tests were conducted and specimens with titer levels of  $>1:8$  were as follows: for Rubella 95.7 %, HBV 6.4 %, toxoplasmosis 7.3%, CMV 7.3 %, HIV 22.2 %, HSV 30.4%, anaemia 16.0 % and syphilis 18.7%. The proportion of pregnant women experiencing the different types of morbid events ranged from 0.6% to 69.9% for the different types of ailments. The morbidity episode rate was 650 episodes per 1 000 women months of pregnancy.

#### Introduction

Women in developing countries experience an unfair share of life threatening, chronic or other significant health problems related to pregnancy or child birth. While valid data on levels and trends of maternal mortality are essential to make judgements about maternal health and the design of appropriate interventions, very little vigorous research has been undertaken in many areas of obstetric morbidity.<sup>1</sup> Maternal morbidity has far reaching consequences beyond the suffering of the woman. There are implications for the baby, household and society at large. The majority of women in Zimbabwe support their families through various income generating activities. Many experts have not studied the less serious morbidities especially those problems that women must report such as painful intercourse, depression and genital itching, for instance. Women's perception of morbidity makes quantifying difficult. Different morbidities are viewed differently and may even

be considered a normal part of pregnancy. As a result some of these symptoms or conditions may not be reported to health workers.<sup>2</sup> Illnesses are variously and inconsistently categorized as "conditions", complications or complaints. Definitions and terminology for specific illnesses vary. The so called "minor complaints" of pregnancy, nausea and vomiting, backache, fatigue and sleeplessness are rarely addressed even though these conditions may significantly impair women's well being and their ability to work. Swelling of the hands and face may be an ominous sign to health workers, but few women may regard such an occurrence as illness.

Maternal morbidity encompasses morbidity which is a consequence of reproductive behavior including pregnancy, abortion and child birth. The identification of morbid conditions in pregnant women has encountered obstacles mainly due to limitations in medical knowledge, clinical techniques and diagnostics as well as the limited skills of

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health workers. Millions of women suffer from morbidities that are incapacitating but not life threatening. These are aggravated by the cultural beliefs of allowing women to perform hard physical labour, or poor nutrition. The prevalence of anaemia in pregnant women in Zimbabwe has been estimated to be 27% (1989). A study by Nemapare in Masvingo revealed a prevalence of 20.8% of women with a haemoglobin of less than 8 gm/dl.

This study details self reported obstetric morbidity through the prospective collection of morbidity data from the follow up of pregnant women in a rural setting. It is an attempt at defining some elements of reproductive morbidity as well as recommending specific actions to be taken. Most studies that have been conducted on this subject have been based on hospital records and are not community based and most are retrospective rather than prospective. Preliminary results from household surveys of 16 000 women in five developing countries indicate that about seven out of every 10 women report a health problem related to their last pregnancy, delivery or post partum period.<sup>3</sup>

## Materials and Methods

### Study Area and Population.

The study was undertaken in a rural population in five administrative wards in Tsholotsho district in Zimbabwe. Pregnant women were identified in the selected area and followed up on a monthly basis over the study period from July 1994 to March 1996.

In Zimbabwe women of child bearing age constitute 47% of the population and 6% of these are expected to be pregnant or attending antenatal care at any one time.

The study area of five wards was selected on the basis of a population of about 13 000 women of whom 200 would be pregnant and would constitute the study sample, i.e. 6% of the population. Prior to the commencement of the study, campaigns were undertaken to sensitize the community of the objectives of the study and the expected benefits. Women in the study area were encouraged to register their pregnancy as early as possible at the three Rural Health Centres in the study areas. Every pregnant woman who participated in the study and completed it received incentives.

Only women presenting themselves at the clinics before 12 weeks gestation were registered for follow up. Each pregnant woman recruited into the study was required to attend antenatal clinics on a monthly basis during which visit the necessary information on morbidity would be collected for the study. Those defaulting were followed up at their homes by village community health workers. Trained nurses at the three rural health centres servicing the study area were recruited as Research Assistants and were expected to collect the study information after confirming the pregnancy.

### Data Collection.

Each of the pregnant women recruited into the study was advised and expected to visit their respective health facilities at recruitment and subsequently on a monthly basis until delivery. At the initial visit a detailed patient profile was collected, including confirmation of pregnancy and its gestation. A full and standard antenatal history was taken and an examination undertaken. Routine and study blood specimens were collected at the same time.

During the subsequent surveillance visits, a morbidity questionnaire was administered to elicit information on any complaints and visits to health facilities or traditional healers during the intervening period since the last visit. Electronic thermometers were used to record body temperature and if this was equal to or more than 38°C, a blood slide was taken to exclude malaria. Appropriate information relating to delivery was also collected when this occurred.

### Laboratory Tests/Parameters.

Blood samples were collected for parameters related to morbidity and urine was routinely tested for sugar and protein using the Labstix. Pregnancy tests were carried out using the Prognostician Kit. A full blood count was conducted using a Coulter Counter to estimate the haemoglobin levels, in particular.

Serum was tested for syphilis using the Treponema haemagglutination test (TPHA). Virology tests conducted on the blood specimens included the HIV, Hepatitis B surface antigen and the TORCH (Toxoplasma, Rubella, Cytomegalovirus and Herpes simplex).

The results were not made available to the Research Assistants at the Rural Health Centres because of confidentiality. It was not possible to link the test results with the study participants as the sampling was anonymous.

## Results

During the 18 month period of the study, a total of 196 women were recruited into the study. No maternal mortality was recorded among the participants to the study. Some abortions were recorded and so were various episodes of illnesses, complaints and admissions during the period of pregnancy. A total of 47 women were not recruited into the study because they did not meet the criteria to participate in the study mainly because of the advanced state of the pregnancy. Twenty five women were lost to follow up mainly due to migration to South Africa. The study population thus consisted of 171 pregnant women who were followed up throughout their pregnancy. No separate analysis of the characteristics of those women lost to follow up was undertaken.

To accommodate symptoms that are of a recurrent nature the morbidity episode rate was used.

Table 1: Outcome of pregnancy among the 171 pregnant women recruited into the study.

Outcome	n (%)
Maternal death	0 (0.0)
Abortion	20 (11.7)
Home delivery	61 (40.4)*
Trained traditional midwives	42 (24.6)
Health facility delivery	90 (59.6)*

Figures in brackets are percentages of total.

\*Proportion among pregnancies that went full term.

During the course of the study follow up of the 171 pregnant women, a total of 88 outpatient visits over and above the scheduled antenatal visits were made of which only 10% were directly attributable to the pregnancy. One hundred and eight

degrees of admissions were reported among the same group. Sixty percent of the admissions were related to delivery and the rest were for conditions indirectly related to pregnancy. Sixty percent of the women who delivered at health facilities had an episiotomy performed to assist delivery. No information could be obtained for those who delivered at home. There was no significant difference between multiparous and primiparous women with regards to episiotomy.

Six women made visits to traditional and faith healers mainly for the treatment of abdominal pains and vaginal discharge, with the aim of preventing loss of the pregnancy. One of them eventually had a miscarriage. Rape did not affect this group of pregnant women as one reported having been raped and another was assaulted by the husband.

One hundred and sixty four serological test results were obtained from the study group of 171 participants (Table II). A great majority of the samples, 95.7% tested positive for *Rubella* antibodies with a titer significantly above the level of 1:8. More than 50% of the samples with *Rubella* antibodies, had antibody levels of at least 1:256 signifying active infection. The proportion of positive serological tests for syphilis was 18.7%. The prevalence rates for hepatitis B, toxoplasmosis and cytomegalovirus (CMV) were 6.4%, 7.3% and 7.3% respectively. The sero-prevalence of HIV was found to be 22.2% in this predominantly rural population of women and that of *Herpes simplex* titer of >1:8 was 30.4%.

Table II: Results of positive serological tests among the 171 women in the study.

Antibody Test	n	(%)
Syphilis (TPHA)	32	(18.7)
Toxoplasma >1:8	12	(7.3)
Cytomegalovirus >1:8	12	(7.3)
Rubella >1:8	157	(95.7)
Hepatitis Bs Antigen	11	(6.4)
HIV	38	(22.2)
Herpes simplex	52	(30.4)

The mean haemoglobin levels among the study participants was 15.5 gm/dl. While 16% of the women had a haemoglobin of equal to or less than 11 gm/dl. Only one participant had severe anaemia of haemoglobin of 8 gm/dl.

Sixteen percent of the women had haemoglobin (Hb) levels below the World Health Organization (WHO) stipulated level of 11 gm/dl below which a pregnant woman is considered to be anaemic. Studies in Jamaica quote figures of 24% of pregnant women with Hb levels that were less than 11 gm/dl in 1967 and 45% in 1972.<sup>4</sup> The figure of 16% revealed in this study suggests that anaemia is a problem of public health significance in Zimbabwe. This is more so especially when the same study indicates that 11.7% of the women reported episodes of antepartum haemorrhage. Another study in Cameroon found that the prevalence of anaemia in the population was 48.5% among pregnant women in a rural area compared to 17% in urban areas.<sup>2</sup> Data on women delivering at the Aberdeen maternity hospital in the United Kingdom showed that 15% of women in hospital had anaemia compared to 25% among those discharged and were at home.<sup>5</sup>

Table III: Proportion of the 171 women with the various degrees of anaemia.

Haemoglobin Level	n	(%)
>11 gm/dl	119	(70.4)
<11 gm/dl	27	(16.0)
<10 gm/dl	22	(13.0)
<8 gm/dl	1	(0.6)
	*169	(100)

Mean Hb level = 15.5 gm/dl. SD 17.6

\*Two participants did not have results available.

Only two, (1.2%) of the participants were reported to have a body temperature of 38°C or more during the course of the study. Blood slides from these patients were negative for malaria parasites. These women had symptoms of infection of the genitourinary tract.

Several complaints were reported by the pregnant women and these included abdominal discomfort, nausea and vomiting, palpitations, headaches, dizziness, diarrhoea, depression, dysuria, PV discharge and perineal itching in descending order of frequency. Comparatively there was no difference in the occurrence of morbid events between primiparous and multiparous women in the study.

Table IV: Incidence of self reported morbidity among the 171 study participants.

Morbid events reported during pregnancy	% of women reporting at least a morbid event	Proportion with condition presenting to health facilities treatment
Swelling of feet/hands	24.0	0
Pyrexial episodes	1.2	0
Elevated blood Pressure	3.5	16.7
Backache	8.7	33.3
Dental/Gum problems	24.0	0
Antepartum Bleeding	11.7	0
Abdominal discomfort	69.6	14.3
Diarrhoea	41.5	9.9
Headache	46.2	2.5
Palpitations	58.0	0
Dizziness	40.9	0
Depression	39.8	0
Constipation	24.0	0
Nausea and vomiting	69.0	0
Dysuria	25.7	0
Urinary frequency	14.6	0
Varicose veins	10.5	0
Breast related problems	0.6	0
Episiotomy	8.1	Performed at health facilities
Caesarian section	1.8	Performed at health facilities
PV discharge	29.8	5.8
Perineal itching	33.3	0

The overall morbidity episode rate was calculated to be 650 episodes per 1 000 women months of pregnancy. This rate is based on the assumption that all the women were each followed for nine months of the pregnancy. This is not the

case as some defaulted and others lost their pregnancies. This figure should be taken as an under estimate of the rate.

*Table V: Incidence of self reported morbidity among pregnant women by parity.*

Reported morbidity	% reported morbid incidents among primipara (Total=125)	% reporting morbid events among multiparous women (Total=46)
Swelling of feet/hands	17.4	26.4
Episodes of pyrexia	0.0	1.6
Elevated blood pressure	2.2	4.0
Backache	6.5	9.6
Dental/gum problems	26.1	23.2
Antenatal bleeding	8.7	12.8
Abdominal discomfort	76.1	67.2
Diarrhoea	39.1	42.4
Headache	41.3	48.0
Palpitations	58.7	57.6
Dizziness	41.3	40.8
Depression	47.8	36.8
Constipation	47.8	25.6
Nausea and vomiting	19.6	71.2
Dysuria	28.3	24.8
Urinary frequency	13.0	15.2
Varicose veins	0.0	14.4
Breast related problems	0.0	2.4
Episiotomy	19.6	3.2
Caesarian section	0.0	2.4
PV Discharge	34.8	28.0
Perineal itching	39.1	31.2

*Table VI: Morbidity contributing to outpatient visits during periods intervening between scheduled study visits. (Not directly related to the pregnant state).*

Condition/Symptomatology	% of OPD visits
Abdominal discomfort	27.4
Diarrhoea	17.7
Respiratory symptoms	17.7
STD/lower abdominal pains	11.3
Clinical Malaria	8.1
Backache	8.1
Elevated blood pressure/headache	3.2
Rape	1.6
Assault by husband	1.6
Breast sores	1.6
Ultrasound investigation	1.6

The pregnancy loss due to spontaneous abortion (miscarriage) was 11.7% of all pregnancies.

## Discussion

Many policy makers apparently think that maternal morbidity is a relatively small unimportant problem. The prevalence rates in several studies indicate huge losses in productivity by women. This study reveals that more than six out of 10 women reported experiencing a health problem during the course of their pregnancy. Similar household surveys in five developing countries indicate that seven out of every 10

women report a health problem that is related to their last pregnancy.<sup>3</sup> Of the women from this predominantly rural population 22.2% were found to be positive for HIV. As expected this figure is lower than that found in urban areas but similar to those found in other rural areas in Zimbabwe.<sup>4</sup> Professor Latif found an HIV seroprevalence of 32% among women attending antenatal clinics for the first time during pregnancy in urban clinics in Harare (NACP 1995 Annual Report).

Zimbabwe is considered to be one of the most severely affected countries with the HIV/AIDS problem in sub-Saharan Africa. The whole scenario is further compounded by the fact that Sexually Transmitted Diseases (STDs) continue unabated to dominate outpatient statistics. Of the pregnant women in this study 18.7% were positive for syphilis. This is almost double the proportion found during routine antenatal screening at public health facilities.

Efforts for the prevention and control of HIV/AIDS/STD are currently spearheaded by the National Aids Coordination Programme of the Ministry of Health and Child Welfare. This unit coordinates its activities with various Non Governmental Organizations and other sectors that are involved in the prevention and control of HIV/AIDS/STD. However, the efforts of the Ministry of Health and Child Welfare to coordinate multi sectoral prevention and control activities are hampered by its lack of a mandate to do so and hence to date these efforts have largely been sectoral and uncoordinated. A multi sectoral strategy is currently being formulated.

Only six of the study women presented with elevated blood pressure and only one of them exhibited severe symptoms that could be associated with pre eclampsia. Twenty four percent of the women in the study complained of experiencing swelling of either their hands or feet, a symptom that may herald pre eclampsia. These results contrast with those found elsewhere where pre eclampsia and eclampsia are among the commonest conditions in pregnancy. For example, a study conducted in China<sup>7</sup> found that the majority of pregnant women experienced pre eclampsia and that 37% of pregnant women interviewed experienced some illness during pregnancy.

While it is important to note that in the majority of surveys in developing countries various complications are usually two to five times more common among unbooked women than those who receive antenatal care, estimates in this study are hardly influenced by this factor as over 90% of the women in Zimbabwe attend antenatal care.

This study reveals a very high prevalence of morbid events with up to 69.9% for the most reported condition. The range in the proportion of women reporting one illness or the other during pregnancy was between 0.6% and 69.9% for the various conditions. A similar survey of 6 000 women indicated that 76% of women interviewed experienced morbidity in Egypt and 80% in Ghana.<sup>3</sup> As many as 30% of deaths among women of reproductive age are related to pregnancy and its complications.

As a group, episodes of complaints related to the genitourinary tract were very high and this is a serious concern, especially considering the very high prevalence of HIV/AIDS in the country. The more debilitating conditions that required the women to consult health workers included,

The need for caesarian section and treatment for backache and diarrhoeal diseases. Out of the total 1 003 illness episodes reported during the course of the study, only 35 (3.5%) resulted in a consultation with health professionals for some help or treatment.

The reasons for this apparent apathy in seeking treatment may include the feeling that it is inappropriate to consult health workers for such conditions as say, nausea and vomiting. Such conditions may be considered by the women to be normal during pregnancy even if at times they may be severe. In some cases professional help may not be available, considered unsatisfactory or ineffective. It is also probable that health workers were only willing to treat those women they considered to have more severe problems thus discouraging most women from attending the clinics for treatment.

Measuring some aspects of morbidity proved complicated because of both subjective and objective reasons. The mothers provided information about themselves on a monthly recall basis. Some opportunity was also available to use chemical/laboratory confirmation for some diagnoses. Studies have also verified that womens' perception and descriptions of, say, obstructed labor corresponded fairly well to medical descriptions of signs and symptoms. However, many morbidities could not be confirmed clinically. The fundamental problem in this task is that you ask any pregnant woman how they feel, they are invariably tired !

The frequency of follow up during the course of the study was influenced and to some extent facilitated by the use of village community workers who followed up defaulters to their homes and encouraged them to report for follow up. On average each pregnant woman participating in the study was followed up for five of the months she was pregnant. This was a great achievement considering that most of the women reported at 12 weeks gestation.

The study estimated the seroprevalence of toxoplasmosis, Rubella, cytomegalovirus and *Herpes simplex* virus (TORCH) as well as that of hepatitis B virus. On the basis of the haemagglutination antibody titer, 95.7% of the women were found to have Rubella antibodies at levels equal to or higher than 1:8. A similar study in Yugoslavia conducted in 1993 found a seroprevalence of 93.2%.<sup>8</sup> It is well known that Rubella infection during pregnancy can induce severe congenital defects. With such a high prevalence rate it is also prudent to note that Rubella specific reactivity in sera can occur after infection with other viruses. Women exposed to Rubella may, however, be offered normal human immunoglobulin as soon as possible after exposure and if delayed, treatment may be ineffective. It is, however, very difficult to determine precisely when any of these women become exposed to Rubella infection. A study in India<sup>9</sup> concluded that the need for routine immunization to control Rubella could not be 'duly recognized' despite prevalence levels of 94.9% among mothers. The results of the Tsholotsho study certainly indicate the need to look into the occurrence and extent of congenital defects due to Rubella in Zimbabwe.

The seroprevalence for toxoplasmosis and cytomegalovirus of 7.3% each compared favorably with prevalence levels of 74.3% for cytomegalovirus found among pregnant women in Poland.<sup>14</sup> On the other hand a study in Jamaica<sup>10</sup> showed

prevalence rates of 57% for *Toxoplasma gondii*, 69% for Rubella and 97% for cytomegalovirus. Of the women in this study 30.4% had antibodies against the *Herpes simplex* virus compared with 91% in Jamaica.<sup>10</sup> All these infections are associated with adverse effects on the unborn child and as such adversely influence infant mortality rates.

The sero-prevalence for hepatitis B surface antigen of 6.4% though moderately high compares favorably with the prevalence figures quoted from Nigeria where the prevalence was found to be 11.2% among pregnant women in Ibadan.<sup>11</sup> A similar study revealed a sero-prevalence of 16.2% among women attending antenatal care in Ilorin, Kwara state, Nigeria.<sup>12</sup> The hepatitis B carriage state is commonly associated with hepatocellular carcinoma.<sup>13</sup>

It is estimated that approximately 10% of the population in Zimbabwe are carriers of the hepatitis B surface antigen. Perinatal transmission occurs in five to 15% of women who are HBs antigen positive and the predominant mode being postnatal horizontal transmission. From about six months of age there is a rapid rise in hepatitis B markers reaching a peak of 25% HBs antigen in children under the age of five years. Despite the extent of the problem Zimbabwe does not have a policy of screening for HBV infection during pregnancy. The lack of financial resources is one of the major obstacles to the adoption of universal antenatal screening for hepatitis B which is recognized as a public health problem. Resources are also not enough to establish a sustainable hepatitis B vaccination programme in Zimbabwe. Vaccines are, however, available for those individuals who are at risk by virtue of their occupation.

The prevalence of spontaneous abortions in this study was about 12% of the pregnancies that were followed up. Studies in sub-Saharan Africa indicate that a figure of between 10 to 15% of known pregnancies are lost due to miscarriages.<sup>15</sup> This figure is comparable to the findings in this study. There was no obvious correlation between spontaneous abortions and the occurrence and levels of TORCH antibodies in this study. Induced abortion is much more of a problem in quantitative terms than spontaneous abortion in Zimbabwe.

**Conclusions.**  
The study attempted to quantify the less serious morbidities, those problems that women must report and which most women often do not perceive as morbidity. The methodology of measuring morbidity in this study was not all that sophisticated and cannot be as reliable and valid as clinical diagnoses. However, the interviews and symptom questions were stated in a very simple manner and language by nurses at health centres and interviews were held on a monthly basis. Within these limitations the study reveals that the morbidity episode rate in this population is 650 episodes per 1 000 women months of pregnancy. As a result of logistic problems the study had a study sample of 171 compared to the ideal sample size of at least 200 pregnant women based on similar studies.

Because of the wide range of complaints it is difficult to draw generalized conclusions. What can be said is that the majority of women believed that they had a variety of health problems and reported these. Many of the problems are relatively minor but still debilitating in one way or the other. The cumulative effect of these complaints are invariably debilitating enough to have an effect on the pregnant women.

Maternal morbidities from life threatening conditions to simple discomforts are more common than previously believed. Despite the fact that the study did not explore a comparative analysis between pregnant women and the none pregnant it is empirically evident that the pregnant woman probably has more health problems than one who is not.

The sero-prevalence levels from this study indicate that *Rubella*, *Herpes simplex* virus, hepatitis B virus and syphilis are public health problems of a significant enough nature to warrant the need for further exploration through appropriate public health measures. From the extent of the *Rubella* problem it will be necessary to conduct further studies to determine the risk and extent of congenital *Rubella* infection from seropositive pregnant women in Zimbabwe. The study also confirms that HIV is a problem for both the urban as well as rural populations in Zimbabwe and that the rural population is probably currently fairly better off and fast catching up. At a prevalence rate of 16% of pregnant women, anaemia is a public health problem that requires further investigation, confirmation and control measures to be put in place. A comprehensive study is recommended to determine the actual extent of anaemia among pregnant women.

It is proposed that further selective studies be conducted to follow up and confirm the hypotheses that arise from the results of this study indicating the public health significance of some morbidity among the pregnant women in this rural population. This study provides a 'red flag' for policy makers to consider the extent and possible implications of these results on women's health. The limiting factor in dealing with women's health is demonstrably poor access to professional help, unsatisfactory/ineffective services where available and at times the negative attitude of health workers to women's complaints.

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