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Southern and Eastern Africa Consortium for Monitoring Educational Quality

Pupil and Teacher Knowledge about HIV and AIDS in Swaziland

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Introduction

The HIV and AIDS pandemic presents a major challenge for the social and economic development of nations located in Sub-Saharan Africa.

The Joint United Nations Programme on HIV and AIDS (UNAIDS, 2010: 180) has estimated that in this region there are more than 20 million people living with HIV, and that around 10 percent of these people are below the age of 15 years.

In 2009 governments and international donors together provided US$ 15.9 billion for the global AIDS response (UNAIDS, 2010: 146). At this point of time there is no known cure for AIDS, and a vaccine for HIV still appears to be in a development phase.

The first case of HIV infection in Swaziland was diagnosed in 1986. In 2009 around 180,000 Swazis were living with HIV, and around 10,000 were children under the age of 15 years (UNAIDS, 2010: 180). Swaziland now has the highest HIV adult prevalence rate in the world. (UNAIDS, 2010:28).

AIDS is widely accepted as being one of the main causes of a dramatic increase in the number of orphans. The estimated number of orphans aged 0-17 years due to AIDS in Swaziland rose from 29,000 in 2001 to 69,000 in 2009 (UNAIDS, 2010: 186).

There has been a slight increase in the overall prevalence of HIV among Swazi adults aged 15-49 years – from 23.6% in 2001 to 25.9% in 2009 (UNAIDS, 2010: 181). However, it is difficult to evaluate the significance of this small change because in 2007 changes were made in the methodology used to estimate HIV infection rates (UNAIDS, 2007: 3).

The United Nations has recognized that the education sector has a critical role to play in terms of the delivery of effective HIV and AIDS prevention education programmes.

The Education Sector Response

The Swaziland Ministry of Education and Training has responded to this message by implementing HIV and AIDS prevention education programmes that aim to ensure that all young people possess the basic knowledge that is required to make informed decisions about behaviors related to HIV and AIDS that will protect and promote their health.

The primary school level is a crucial access point for HIV and AIDS prevention education programmes. This is because: (a) most children attend these schools, and (b) it is important to improve the knowledge of children about HIV and AIDS before they become sexually active and/or involved in high-risk behaviors.

The SACMEQ Research Programme

The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a network of 15 Ministries of Education: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Uganda, Zambia and Zimbabwe. SACMEQ's main mission is to undertake integrated research and training activities that: (a) provide educational planners with the technical skills required to monitor the quality of their own education systems, and (b) generate information that can be used to plan and improve education.

The SACMEQ Consortium has undertaken three large-scale cross-national studies of the quality of education in Southern and Eastern Africa: the SACMEQ I Project (1995-1999), the SACMEQ II Project (2000-2004) and the SACMEQ III project (2007-2011).

The SACMEQ III Project included an additional data collection concerned with a detailed assessment of pupil and teacher knowledge about HIV and AIDS.

A New HIV and AIDS Knowledge Indicator

In 2006 SACMEQ's Governing Body (the SACMEQ Assembly of Ministers of Education) expressed concern about the need for a well-designed indicator that could be used to guide informed debate about the effectiveness of HIV and AIDS prevention education programmes. The one indicator that had been widely used to judge these programmes (the "United Nations General Assembly (UNGASS) HIV-AIDS Knowledge Indicator for Young People") was considered to lack validity because it was based on a short list of five test questions that were problematic in terms of wording complexity, content coverage, and reliability.

The SACMEQ Ministers asked the SACMEQ III Project Research Teams to address information needs in this area by developing a valid SACMEQ HIV-AIDS Knowledge Test that would be suitable for administration to Grade 6 pupils (who have average ages of 13.5 years across the SACMEQ countries and 13.9 years in Swaziland) and their teachers.

The SACMEQ HIV-AIDS Knowledge Test (HAKT)

The SACMEQ HIV-AIDS Knowledge Test (HAKT) was designed to provide a valid assessment of pupil and teacher knowledge about HIV and AIDS with respect to the topics specified in official school curriculum frameworks, textbooks, and teaching materials used by the SACMEQ countries.

The 86 HAKT test items covered 43 curriculum topics, and they were focused on an assessment of "the basic knowledge about HIV and AIDS that is required for protecting and promoting health". These topics were grouped into five main areas: definitions and terminology; transmission mechanisms; avoidance behaviours; diagnosis and treatment; and myths and misconceptions.

The HAKT was administered in late 2007 to 61,396 Grade 6 pupils and 8,026 teachers in 2,779 schools across the 15 SACMEQ countries. In Swaziland the HAKT was administered to 4,030 Grade 6 pupils and 358 teachers in 172 schools. The advanced psychometric analyses that were applied to the SACMEQ III Project data indicated that the HAKT had a high level of reliability, and that it was suitable for placing pupils and their teachers on a common scale of knowledge about HIV and AIDS.

In Swaziland, the SACMEQ III Project data collection covered 4 education regions: Manzini, Lubombo, Hhohho, and Shiselweni.

The performance of pupils and teachers on the HAKT in these education regions, and for SACMEQ countries overall, was assessed by applying two complementary scoring procedures:

(a) "HAKT Scores" – these were Rasch-scaled scores on the HAKT that had been transformed to a Grade 6 pupil average of 500 and standard deviation of 100.

(b) "HAKT Minimal Knowledge Scores" – these were dichotomous scores that indicated whether pupils or teachers reached (score=1) or did not reach (score=0) SACMEQ's "minimal" HIV and AIDS knowledge benchmark (defined as mastery of half of the official curriculum assessed by the HAKT).

Table 1 contains summarized information about these two scores for Grade 6 pupils and teachers in the 4 Swaziland education regions and SACMEQ countries. Two sets of figures have been presented in the table for these groups of respondents: (a) the Average HAKT Scores and (b) the Average HAKT Minimal Knowledge Scores (expressed as percentages).

For example, the figures in the second row of **Table 1** indicated that in Swaziland's Manzini region: (a) the average HAKT Scores for pupils and teachers were 536 and 757, respectively, and (b) the percentages of pupils and teachers that reached the minimal level of knowledge on the HAKT were 55% and 100%, respectively.

Table 2 contains the average HAKT Scores for groups of Swaziland's Grade 6 pupils defined by four demographic variables: Socioeconomic Status, Geographic Location, Gender, and Age.

For example, the figures in the first row of **Table 2** indicated that pupils from high socioeconomic status families had a higher average HAKT Score (540.9) than pupils from low socioeconomic status families (522.3), and that the difference between these averages (18.6) exceeded two standard errors of sampling (10.4).

Note that SACMEQ Projects use pupils as the units of analysis. Therefore, teacher statistics such as means refer to teacher characteristics associated with the average pupil.

Pupil Knowledge Levels

(a) SACMEQ Countries

The average HAKT Scores for Grade 6 pupils provided a means of making **relative comparisons** of knowledge levels among SACMEQ countries. The results presented for countries in the first column of **Table 1** showed that: (a) Grade 6 pupil averages ranged from a low of 453 in Mauritius to a high of 576 in Tanzania, and (b) the Swaziland pupil average of 531 was well above the SACMEQ average of 500.

These **average HAKT Scores** for SACMEQ countries were dangerously deceptive. For example, they suggested that Grade 6 pupil knowledge levels about HIV and AIDS in Swaziland were excellent because the average score for Swaziland (531) was the second highest among all SACMEQ countries. However, an examination of **average HAKT Minimal Knowledge Scores** suggested the need for a different conclusion!

The average HAKT Minimal Knowledge Scores for Grade 6 pupils provided a means of making **normative comparisons** of knowledge levels among SACMEQ countries. (***NOTE:*** *It was expected that* ***100%*** *of pupils in* ***all*** *SACMEQ countries should reach the minimal knowledge level).*

The results presented for countries in the second column of **Table 1** showed that: (a) the percentages of pupils with minimal knowledge ranged from 17% in Mauritius to 70% in Tanzania, and (b) the percentage of Swaziland's pupils that reached the minimum knowledge level was a low value of 52%. That is, the percentage of pupils reaching the minimal knowledge level in Swaziland and all other SACMEQ countries was far below the expected level of 100%.

The results described above indicated that major alarm bells should be ringing in Swaziland because in 2007 around one half (48%) of the Grade 6 pupils lacked the minimal knowledge about HIV and AIDS that was required for protecting and promoting their health. In all other SACMEQ countries the situation was also very serious - with a majority of Grade 6 pupils in most countries lacking minimal knowledge.

(b) Swaziland's Education Regions

The figures for Swaziland's education regions presented in the first column of **Table 1** and **Figure 1** showed that regional variations in Grade 6 pupil knowledge about HIV and AIDS were fairly small.

For example, the difference between average HAKT Scores for Swaziland's highest and lowest scoring regions was only around 30 score points. This was a very small difference in comparison with the corresponding differences for other SACMEQ countries - such as Tanzania (59), Zimbabwe (119), Mozambique (132), and Malawi (144).

The average HAKT Minimal Knowledge Scores for Swaziland's education regions in the second column of **Table 1** also demonstrated small regional variations in Grade 6 pupil knowledge about HIV and AIDS. The difference between the regions with the highest and lowest percentages of pupils reaching SACMEQ's minimal knowledge benchmark was only 5 percent.

Teacher Knowledge Levels

In the third and fourth columns of **Table 1** the average HAKT Scores and average HAKT Minimal Knowledge Scores have been presented for teachers in SACMEQ countries and Swaziland's education regions. The figures showed that the average HAKT Score for teachers exceeded 700 for most SACMEQ countries, and for SACMEQ overall it reached 746 – almost 250 score points above the Grade 6 pupil average of 500.

In Swaziland, the average HAKT Score for teachers was 759 at the national level, and exceeded 750 for all of Swaziland's education regions. In addition, the percentages of teachers that reached SACMEQ's minimal knowledge benchmark of mastering at least one half of the official school curriculum were around 100% for all SACMEQ countries, and 100% for all Swaziland education regions. In all four Swaziland regions the gap between teachers and students knowledge level was around 50 percentage points.

These research results came as a surprise to the Swaziland SACMEQ III Project Research Team because they had assumed that teachers with high levels of knowledge about HIV and AIDS should be able to transmit this important information to their pupils (whose average age was around 14 years). The assumption was obviously faulty and certainly warrants further research in order to provide an explanation for the substantial "knowledge gap" between pupils and teachers. One area of enquiry that deserves attention is to investigate whether it is the case that teachers have adequate subject matter knowledge – but lack training in the pedagogy of "how to teach" topics that require discussions of human sexuality.

Demographic Differences in Knowledge

In **Table 2** some research results have been presented in order to examine demographic differences in the HIV and AIDS knowledge of Swaziland's Grade 6 pupils. Four variables were used to generate groups of pupils for making comparisons of average HAKT Scores. Significant differences in group averages (that is, greater than two standard errors) were noted for the Socioeconomic Status and Location variables – with pupils from wealthier backgrounds and pupils from urban locations demonstrating much greater knowledge about HIV and AIDS. No significant differences were observed for pupil groups defined by Gender and Age.

Research-Based Conclusions and Policy Suggestions

1. Low Knowledge Levels

Knowledge levels about HIV and AIDS for around one half of Swaziland's Grade 6 pupils during 2007 were below SACMEQ's "minimal" knowledge benchmark (which was defined as mastery of at least half of the official school curriculum). The Ministry of Education and Training should acknowledge that HIV and AIDS prevention education programmes need to be monitored and evaluated to ensure they are working effectively.

2. Regional Differences in Knowledge

There were no major differences in average Grade 6 pupil knowledge about HIV and AIDS among education regions in Swaziland.

3. Pupil-Teacher "Knowledge Gap"

There was a substantial HIV and AIDS "knowledge gap" between Swaziland's Grade 6 pupils and their teachers. The Ministry of Education and Training should investigate why well-informed teachers were not able to transmit this important knowledge to a substantial proportion of their pupils.

4. Demographic Differences in Knowledge

There were significant differences in knowledge about HIV and AIDS between groups of Swaziland's Grade 6 pupils defined by Socioeconomic Status and Location. The Ministry of Education and Training should expand and intensify the delivery of HIV and AIDS prevention education programmes in poor communities and non-urban schools.

A Concluding Comment

All children need to have the basic knowledge about HIV and AIDS that is required to protect and promote their health. However, it was clear from the SACMEQ III Project research results that during 2007 around one half of the Grade 6 pupils in Swaziland did not have this minimal level of knowledge.

This was indeed alarming because Grade 6 pupils in Swaziland (with an average age of 13.9 years) are entering a stage of mental and physical development where they may become sexually active, and/or may choose to become involved in high-risk behaviours.

The Ministry of Education and Training should therefore take immediate action to: (a) address the research-based conclusions presented above, and (b) facilitate the development and implementation of more effective HIV and AIDS prevention education programmes that focus on the upper grades of primary school.

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Table 1

Pupil and Teacher Scores on the SACMEQ HIV-AIDS Knowledge Test (HAKT)

	PUPILS		TEACHERS	
	HAKT Score	Reached Minimal Level (%)	HAKT Score	Reached Minimal Level (%)
TANZANIA	576	70	724	99
Swaziland: Manzini	536	55	757	100
Swaziland: Lubombo	532	53	758	100
SWAZILAND	**531**	**52**	**759**	**100**
Swaziland: Hhohho	527	49	770	100
Swaziland: Shiselweni	527	50	752	100
MALAWI	512	43	714	99
KENYA	509	39	793	100
MOZAMBIQUE	507	40	741	99
SOUTH AFRICA	503	35	781	100
NAMIBIA	502	36	764	99
ZANZIBAR	501	38	657	94
BOTSWANA	499	32	782	100
UGANDA	489	33	708	98
ZAMBIA	488	35	744	98
SEYCHELLES	488	25	789	99
ZIMBABWE	477	30	785	99
LESOTHO	465	19	751	98
MAURITIUS	453	17	698	98
SACMEQ	**500**	**36**	**746**	**99**

Table 2

Average HAKT Scores for Swaziland Pupils across Four Demographic Variables

DEMOGRAPHIC VARIABLE	1st Group	2nd Group	Diff (SE)
Socioeconomic Status (Low/High)	522.3	540.9	18.6 (5.2)**
Location (Isolated-Rural-Town/City)	526.5	554.1	27.6 (8.2)**
Gender (Males/Females)	531.3	530.3	-1.0 (4.8)
Age (Younger/Older)	533.5	527.5	-6.0 (4.9)

Diff = Difference

Figure 1

Variation in pupil knowledge about HIV and AIDS among SACMEQ school systems and among regions in Swaziland