The Relationship Between Scientific Knowledge and Behaviour: An HIV/AIDS Case

Lindelani Mnguni[a]*, Mia Abrie[b] and Liesel Ebersohn[c]

[a]*Faculty of Health Sciences, Centre for Health Science Education, School of Clinical Medicine, University of the Witwatersrand, Johannesburg, South Africa;* [b]*Faculty of Education, Department of Science, Mathematics and Technology Education, University of Pretoria, Pretoria, South Africa;* [c]*Faculty of Education, Department of Educational Psychology, University of Pretoria, Pretoria, South Africa*

Debates on the role of scientific knowledge to affect behaviour are continuing. The theory of planned behaviour suggests that behaviour is influenced by attitudes, subjective norms and perceived behavioural control and not by knowledge. However, a large body of knowledge argues that increased HIV/AIDS-related knowledge leads to the adoption of safe behavioural practices. The purpose of this non-experimental survey study, therefore, was to investigate the correlation between academic HIV/AIDS knowledge, functional HIV/AIDS knowledge and self-reported behavioural preferences of 300 biology and 243 non-biology students from nine South African schools. Results suggest a correlation between students' understanding of academic and functional HIV/AIDS knowledge. The behavioural preferences of both biology and non-biology students were generally the same and safe. Among biology students, correlation was observed between academic HIV/AIDS knowledge and self-reported safe behavioural preferences, which was not the case for non-biology students, where functional HIV/AIDS knowledge correlated with self-reported safe behavioural preferences. Within schools, however, no correlation was found between both forms of HIV/AIDS knowledge and self-reported safe behavioural preferences. There were indications that context-specific local factors have a greater influence on behavioural preferences. These findings suggest that the type of knowledge that could influence behaviour is informed by context-specific dynamics.

Keywords: *Scientific HIV/AIDS knowledge; Correlation; Generic HIV/AIDS knowledge; Theory of planned behaviour*

*Corresponding author. Faculty of Health Sciences, Centre for Health Science Education, School of ClinicalMedicine, University of the Witwatersrand, Johannesburg, South Africa. Email: lindelani.mnguni@wits.ac.za

Introduction

The significance of science education in addressing social issues continues to be a debated one. In developing countries like South Africa, science and education in general are trusted avenues where students learn scientific knowledge. However, Lee et al. (2013, 5) argue that 'beyond understanding contemporary science, it is imperative that students develop a sense of character and values as global citizens'. Choi et al. (2011) go on to argue that science classroom should go beyond teaching science knowledge and reasoning skills to incorporate moral, character and citizenship education. While socioscientific instruction has been identified as one vehicle to achieve citizenship education (Zeidler et al. 2005), one of the major problems is that there are various factors that determine morality, character and citizenship besides formal education. To this effect, John Dewey has been accused of failing 'to resolve the dualism between the school and society that he fought to overcome because he failed to account for the many institutions in society which provide education' (Zuga 1992, 5). Dewey's (1916) argument in this regard is that 'education should shape the experiences of the young so that instead of reproducing current habits, better habits shall be formed, and thus the future adult society be an improvement on their own'. However, Hodson (2004, 2) states that 'regrettably, science is often portrayed as the de-personalized and disinterested pursuit of objective truth, independent of the society in which it is practised and untouched by ordinary human emotions, values, and conventions'. As a consequence, science and education, in general, fails to facilitate development of students with regards to critical citizenship skills. In the research presented in this paper, the researchers explored the significance of scientific knowledge on everyday issues. This was done within the context of HIV/AIDS in South Africa by exploring the relationship between the HIV/AIDS knowledge of students and their reported behavioural preferences. HIV/AIDS knowledge was classified as either scientific or generic. Scientific HIV/AIDS knowledge is the knowledge taught in the South African secondary school biology, which constitutes content related to the life cycle of HIV, the structure of the virus and the human immune system. Generic HIV/AIDS knowledge is the basic knowledge presented through various other media, and addresses abstinence, faithfulness to one sexual partner and condomising, also known as ABC (Bennett, Boerma, and Brugha 2006; Dorrington et al. 2006; UNAIDS 2009).

Theoretical Framework

The relationship between behaviour and knowledge has been researched significantly. However, there is a dearth of knowledge regarding context-specific knowledge and behaviour, particularly biology knowledge and HIV/AIDS. With regards to behaviour in general, Ajzen (1991) in his theory of planned behaviour suggests that a person's behaviour is determined by his/her behavioural intentions (Figure 1; Ajzen 1991, 2006). In this instance, the behavioural intentions can be defined as the person's attitude towards the behaviour itself, and can either be for or against the behaviour in question (Kuther 2002). Intention relates to motivational factors that influence behaviour, willingness to try, as well as the amount of effort that people are willing to exert in performing such behaviour (Ajzen 1991). Furthermore, planned behaviour depends on subjective norms

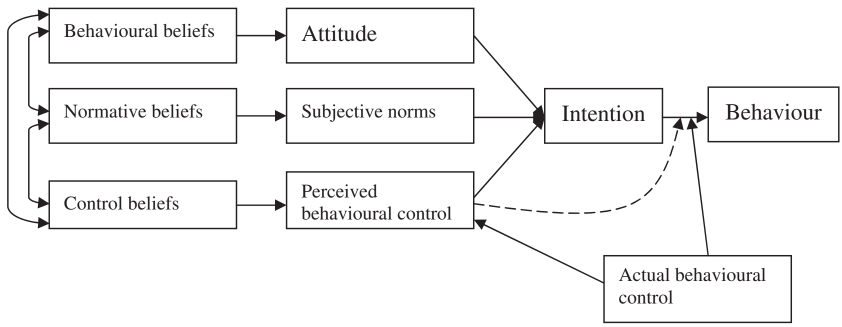

Figure 1. The theory of planned behaviour (adapted from Ajzen 2006)

which are other people's perceived opinions about the behaviour (Figure 1). This means behaviour will depend on facilitating factors, context of opportunity, resources and action control (Ajzen 1991).

In addition to these factors, behaviour is influenced by perceived behavioural control (Ajzen 1991). This is the individual's subjective belief about whether or not they have the ability to behave in a certain way (Hansen, Jensen, and Solgaard 2004). Other researchers have linked the perceived behavioural controls as based on the theory of achievement motivation as well as self-efficacy (Ajzen 1991). The theory of achievement motivation defines an individual's expectancy of success as the perceived probability of succeeding at a given task (Ajzen 1991). Self-efficacy (Bandura 1991) refers to one's judgments on how well they can execute courses of action required to deal with prospective situations, for example that behaviour is influenced by confidence in one's ability to perform. In this regard, self-efficacy influences amongst other things, the choice of activities, preparation for an activity, effort expended during activity as well as thought patterns and emotional reactions (Ajzen 1991; Bandura 1991). Ajzen (2006) further argues that beliefs also affect behaviour (Figure 1). For example, behavioural beliefs, which are beliefs about the likely consequence of a behaviour, have been shown to affect the attitude towards behaviour. Furthermore, normative beliefs, that is, beliefs about the expectations of other people influence subjective norms. In addition, Ajzen (2006, 1) indicates that 'control beliefs about the presence of factors that may facilitate or impede performance of the behaviour' also affect perceived behavioural control. He further argues that beliefs (that is, behavioural, normative and control beliefs) influence each other. Ajzen further indicates that the performance of a behaviour requires a strong actual behavioural control. The actual behavioural control refers to the skills and other resources required to perform a particular behaviour. Therefore, performance of a behaviour needs both the intention as well as a sufficient level of behavioural control.

Consequently, based on the theory of planned behaviour, the researchers held a view that students' HIV/AIDS-related behaviour would be individualistic, voluntary, under control, deliberate, planned and is performed. The theory of planned behaviour, however, excludes knowledge and many other factors, such as socio-economic challenges as factors that would affect voluntary behaviour of students. This by implication contradicts numerous claims that increased knowledge fosters safer behavioural practices, particularly in the context of HIV/AIDS (e.g. Maticka-Tyndale, Wildish, and Gichuru 2007). The researchers, therefore, wanted to explore this dispute by determining the relationship between scientific knowledge taught, specifically in biology and students' self-reported behavioural preferences.

Research Questions

Based on the above arguments, the following hypotheses were tested:

(1) Biology students have a significantly higher knowledge of HIV/AIDS compared with non-biology students, and
(2) scientific HIV/AIDS knowledge correlates positively with generic HIV/AIDS knowledge as well as safe behavioural preferences reported by students.

In the light of the above hypotheses, the aim of the study was to determine whether there is a correlation between HIV/AIDS knowledge and behavioural preferences of students. In this regard, the following research questions were asked:

(1) How do biology students compare with non-biology students in their knowledge of HIV/AIDS?
(2) To what extent does students' HIV/AIDS knowledge correlate with their self-reported behavioural preferences?

Research Design

A non-experimental survey design was used for data collection (Maree and Pietersen 2007). This survey was aimed at assessing the respondents' scientific HIV/AIDS knowledge, generic HIV/AIDS knowledge and self-reported behavioural preferences related to HIV/AIDS.

Sampling and Ethical Considerations

A non-probability convenience sampling approach was used to select students to participate in the study. A group of nine schools from Msunduzi district, South Africa comprising of two rural/government schools, two urban/government schools, three urban/private schools and two township/government schools participated in the study. These were made up of 300 and 243 biology and non-biology students who were in Grade 11 and aged between 15 and 18 years. Ethical clearance and consent was received from all participants and relevant stakeholders according to the guidelines of the University of Pretoria.

Questionnaire Design

Data were collected using a previously validated closed-ended questionnaire, which was made up of thirty questions spread equally in three sections, namely, scientific HIV/AIDS knowledge, generic HIV/AIDS knowledge and self-reported behavioural preferences. With regards to scientific HIV/AIDS knowledge, the questionnaire probed students' knowledge of virology, bacteriology, immunology, the circulatory system and vaccination, which is taught in the South African Grade 11 biology. Generic HIV/AIDS knowledge tested in the questionnaire related to the transmission of HIV, effects of HIV in the body, the cause of AIDS, symptoms of AIDS and the curability of HIV/AIDS. All biology students had already learnt the scientific HIV/AIDS knowledge tested in the study, and all participating students had already learnt generic HIV/AIDS knowledge in their Life Orientation module prior to the administration of the questionnaire. The theory of planned behaviour was used as a framework for designing items for probing students' self-reported behavioural preferences. In this regard, the items probed students' attitudes, subjective norms and perceived behavioural control towards safe and risk behavioural practices, which as discussed earlier, are determinants of actual behaviours (Ajzen 1991). The questionnaire went through various stages of validation, namely, piloting and validation through a panel of experts.

Data Collection and Analysis

Students' responses to the HIV/AIDS knowledge items in the questionnaire were scored by the researchers, as either correct (allocating a score of 1 point) or incorrect (allocating a score of 0 point) against a set of correct answers, which were prepared by the researcher and validated during instrument development. In cases where there were no responses given by the student or where multiple answers were given, a score mark of zero was allocated. Thereafter, percentage scores were generated for each student, per school and for each of the three sections of the questionnaire. These percentage scores were then used to compare the performance of biology and non-biology students. All statistical analyses were performed using *SPSS Statistics 17.0 Ink* software for the non-parametric Mann–Whitney (or Wilcoxon–Mann–Whitney) test, which is used to detect differences in data distribution, shape and spread as well as differences in medians of two independent samples (Hart 2001; Nachar 2008). With regards to behavioural preference items, the researchers had prepared answers that would imply safe behavioural preference, based on social norms and literature. Students' responses were therefore scored against these by giving one point for a safe behavioural preference and zero for a risk behaviour.

Results

Students' Knowledge of HIV/AIDS

Results showed that there was a statistically significant difference between the mean scores of biology students (53%) and that of non-biology students (32%) for scientific HIV/AIDS knowledge (Tables 1 and 2).

This observation (Table 2) is important because it shows that the test was able to show the expected difference between two groups of students, since the knowledge tested was not formally learnt by non-biology students. It was, however, noted that although non-biology students do not formally learn scientific HIV/AIDS knowledge in their formal curriculum, they have a noteworthy knowledge of the relevant concepts.

Table 1. Representing the average scores of the two groups on biology knowledge

Background		Biology knowledge	HIV/AIDS knowledge
Biology students	Mean	.5287	.7437
	N	300	300
	Std. deviation	.21006	.16191
Non-Biology students	Mean	.3235	.6519
	N	243	243
	Std. deviation	.24593	.19716
Total	Mean	.4368	.7026
	N	543	543
	Std. deviation	.24855	.18413

Table 2. A Mann–Whitney test comparing biology students and Non-biology students in biology knowledge

Ranks					Test statistics[a]	
	Students	*N*	Mean rank	Sum of ranks	Mann–Whitney *U*	19,512.000
Biology knowledge	Biology	300	328.46	98,538.00	Wilcoxon *W*	49,158.000
	Non-biology	243	202.30	49,158.00	*Z*	−9.380
	Total	543			Asymp. sig. (2-tailed)	<.001

Note:Background refers to whether students enrol for biology or not. '1' denotes biology students and '2' denotes non-biology students.
[a]Grouping variable: background.

Non-biology students generally did not know scientific concepts related to human immunology related to HIV/AIDS, such as the names and functions of immunity cells, antigens, antibodies, the body's defences mechanisms against invasion, vaccination, immune deficiency diseases as well as the structure and functionality of viruses in relation to their host cells. Biology students performed relatively well on these concepts, particularly on knowledge of the circulatory system and how it relates to HIV/AIDS. Non-biology students' understood concepts of bacteria the most.

It also emerged from the data that biology students have a significantly greater generic HIV/AIDS knowledge compared with non-biology students (Tables 1 and 3). However, both groups' generic HIV/AIDS knowledge was relatively high. In this regard, however,

Table 3. Presenting students' knowledge of HIV/AIDS concepts

Ranks					Test statistics[a]	
	Students	*N*	Mean rank	Sum of ranks	Mann–Whitney *U*	26,706.000
HIV/AIDS knowledge	Biology	300	304.48	91,344.00	Wilcoxon W	56,352.000
	Non-biology	243	231.90	56,352.00	*Z*	−5.439
	Total	543			Asymp. sig. (2-tailed)	<.0001

[a]Grouping variable: background.

it appeared that both groups generally do not know that there are different strains of HIV, that people with AIDS can be re-infected with HIV and that people with AIDS can be infected with various opportunistic diseases that do not infect people without HIV/AIDS. Furthermore, there is evidence suggesting that a majority of non-biology students believe that there is a vaccine that can stop people from getting HIV. In fact, 37% of non-biology students believe that HIV can be eliminated from the body of infected individuals.

Self-reported behavioural preferences of students

Self-reported behavioural preferences of the two groups of students were not significantly different. Data showed that students reported both safe and unsafe behavioural preferences. As stated earlier, students' attitudes, subjective norm and perceived behavioural control were investigated as determinants of self-reported behavioural preferences. Ten per cent of the 543 students indicated that *it is acceptable to have multiple sexual partners*. Twelve per cent of the respondents indicated that they would have sexual intercourse with someone whose sexual practices were unknown to them. In addition, 19% of the respondents reported that they would have unprotected sexual intercourse. Notably, a significant 79% of the students, however, reported that most students dislike condoms.

There were cases, however, where students were split in their views. For example, 49% of the 543 students indicated that some youths do not protect themselves from HIV and AIDS. Fifty-three per cent of respondents also suggested that it is not *okay to use sterilized needles for injections* (Table 4).

The within school data revealed that there were school-specific factors that seemed to affect behavioural preferences. This is because there were school-specific trends that emerged regarding students' attitudes, subjective norm and perceived behavioural control (Table 5). For example, when asked about unprotected sex outside marriage (Item 1

Table 4. Summary of behavioural preferences of students on selected variables

Question	Agree (%)	Disagree (%)	No response (%)
1. It is okay for unmarried people to have unprotected sexual intercourse.	10.87	88.4	0.74
2. It is okay for people to have many sexual partners.	1.66	97.24	1.10
3. It is okay to use sterilised needles for injections.	41.44	52.85	5.71
4. It is okay to share one razor blade without sterilising it before use.	2.21	95.40	2.39
5. In my community, it is okay for people to have multiple sexual partners.	10.31	85.6	3.13
6. Most students dislike condoms.	78.82	15.7	4.60
7. Young people in my community protect themselves from HIV infection.	441	49.17	4.42
8. I would have sexual intercourse with someone whose sexual activities you do not really know.	12.15	85.45	2.39
9. I would have unprotected sexual intercourse, e.g. without a condom with your boy/girlfriend.	18.97	79.56	1.47
10. I am at risk of getting HIV.	29.47	69.06	1.47

Table 5. Proportion of students who disagree with statements in items 1–10

	School 1		School 2		School 3		School 6		School 7		School 8		School 9	
Items*	Biology	Non-biology	Biology	Non-biology	Biology	Non-biology	Biology	Non-biology	Biology	Non-biology	Biology	Non-biology	Biology	Non-biology
1	100	89	88	83	96	83	97	91	81	73	95	100	81	92
2	96	97	100	94	100	100	97	100	105	100	100	100	100	100
3	68	69	46	39	41	58	59	46	24	27	62	36	22	27
4	100	92	100	92	96	92	100	97	105	100	100	91	100	100
5	100	76	100	94	81	85	97	86	90	87	95	100	86	88
6	12	14	19	25	11	8	10	17	33	47	14	9	11	31
7	72	49	62	33	37	50	45	51	62	40	38	45	58	38
8	96	80	96	81	78	94	100	80	95	100	95	73	89	85
9	92	63	88	69	81	81	100	83	86	87	100	91	83	62
10	60	65	54	75	74	77	97	74	90	73	90	91	53	69

*Statements for items 1–10 are given below. The figures presented in the table indicate the proportion that disagreed with the statements.
1. In your opinion, is it okay for unmarried people to have unprotected sexual intercourse?
2. In your opinion, is it okay for people to have many sexual partners?
3. In your opinion, is it okay to use sterilised needles for injections?
4. In your opinion, is it okay to share one razor blade without sterilising it before use?
5. In your community, is it okay for people to have multiple sexual partners?
6. Do most students dislike condoms?
7. Do young people in your community protect themselves from HIV infection?
8. Would you have sexual intercourse with someone whose sexual activities you do not really know?
9. Would you have unprotected sexual intercourse, e.g. without a condom with your boy/girlfriend?
10. Are you at risk of getting HIV?

Table 5), 19% biology students and 27% non-biology students in School 7, indicated that it was okay to have unprotected sex outside marriage. This was the highest observed proportion with this view in all the schools. Similarly, in Schools 1 and 3, a majority of non-biology students (69% and 58%, respectively) recognise the danger of sharing unsterilised needles, which was not the case in other schools. Meanwhile, the proportion is different for biology students, where biology students (68% in School 1 and 41% in School 3) recognised the danger of unsterilised needles. Evidently, the proportions in School 1 indicate that most of their students held a similar view; whereas in School 3, there were differing views between the biology and non-biology students.

Furthermore, data analysis showed that both biology and non-biology students across all schools indicated that young people generally do not like condoms as reported earlier. In this regard, School 7 reported the highest percentage of dislike of condoms (that is, 67% among biology students and 53% among non-biology students). A majority of biology students from Schools 3, 6 and non-biology students from Schools 1, 2, 5, 7 and 9, indicated that most young people do not protect themselves from HIV infection. Students from School 8 were the only group, where a majority of both biology (62%) and non-biology (55%) students believed that young people did protect themselves from HIV infection.

In addition to this, a majority of students in all the schools suggested that they would not have unprotected sex with strangers. Biology students generally said they would not have unprotected sex with their boy/girlfriends. While a majority of non-biology students said the same, 37% and 38% in Schools 1 and 9, respectively, indicated that they would have unprotected sex with their boy/girlfriends.

There were schools that seemed to have the highest unsafe behavioural preferences. For example, School 7 reported the highest number of students who did not see a problem with unprotected sex outside marriage, a high dislike of condoms and high number of young people who did not protect themselves from HIV infection. On the contrary, School 1 reported the safest behavioural preferences except for the dislike of condoms. This suggests that there may be school-specific factors that affected behavioural preferences of students. Data, however, did not show any significant differences between behavioural preferences of biology and non-biology students.

Relationship Between HIV/AIDS Knowledge and Behavioural Preferences

The first form of relationship between HIV/AIDS knowledge and reported behavioural preferences that was explored was within groups. In the biology group ($n = 300$), results suggested that there is a significant correlation between scientific and generic HIV/AIDS knowledge (Table 6). Furthermore, scientific HIV/AIDS knowledge correlates significantly with safe behavioural preferences, even though generic HIV/AIDS knowledge does not.

In the non-biology group, however, it emerged that there is no significant correlation between scientific HIV/AIDS knowledge and self-reported safe behavioural preferences (Table 7). However, it was found that scientific HIV/AIDS knowledge has a significant correlation with generic HIV/AIDS knowledge. Furthermore, generic HIV/AIDS knowledge has a significant correlation with safe behavioural preferences.

Table 6. Spearman's correlations between scientific HIV/AIDS knowledge, generic HIV/AIDS knowledge and behavioural preferences for biology students ($N = 300$)

		Scientific HIV/AIDS knowledge	Generic HIV/AIDS knowledge	Behavioural preferences
Scientific HIV/AIDS knowledge	Correlation coefficient	1.000		
	Sig. (2-tailed)	.000		
	N	300		
Generic HIV/AIDS knowledge	Correlation coefficient	.481**	1.000	
	Sig. (2-tailed)	.000	–	
	N	300	300	
Behavioural preferences	Correlation coefficient	.140*	.104	1.000
	Sig. (2-tailed)	.016	.073	–
	N	300	300	300

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Table 7. Spearman's correlations between scientific HIV/AIDS knowledge, generic HIV/AIDS knowledge and behavioural preferences for Non-biology students ($N = 243$)

		Scientific HIV/AIDS knowledge	Generic HIV/AIDS knowledge	Behavioural preferences
Scientific HIV/AIDS knowledge	Correlation coefficient	1.000		
	Sig. (2-tailed)	–		
	N	243		
Generic HIV/AIDS knowledge	Correlation coefficient	.534**	1.000	
	Sig. (2-tailed)	.000	–	
	N	243	243	
Behavioural preferences	Correlation coefficient	.095	.214**	1.000
	Sig. (2-tailed)	.142	.001	–
	N	243	243	243

**Correlation is significant at the 0.01 level (2-tailed).

The results suggest that for biology students, scientific HIV/AIDS knowledge may improve knowledge of generic HIV/AIDS knowledge, which in turn could translate to safe behavioural practices. However, this is not true for non-biology students as they report safe behavioural preferences even though they do not have a significant knowledge of scientific HIV/AIDS knowledge. To better understand this quandary, an analysis of the data within schools was performed (Table 8).

Table 8 indicates that for seven out of the nine schools, students' scientific HIV/AIDS knowledge correlated significantly with their generic HIV/AIDS knowledge. However, looking at knowledge (both scientific and generic HIV/AIDS knowledge) and behavioural preferences, correlations were not significant except for School 7, where a negative correlation (significant at 0.05 level) was observed. A negative (but insignificant) correlation was also observed between scientific HIV/AIDS knowledge and behavioural preferences for Schools 2, 3 and 4. Regarding generic HIV/AIDS knowledge and behavioural preferences, findings suggest that there was no significant correlation in any of the participating schools. Further analysis (Table 9) showed that there is an

Table 8. A summary of the correlations between biology HIV/AIDS knowledge and behavioural preferences in schools

School	Sample size	Spearman's correlation with behavioural preferences: Scientific HIV/AIDS knowledge	Spearman's correlation with behavioural preferences: Generic HIV/AIDS knowledge	Spearman's correlation between scientific and generic HIV/AIDS knowledge
1	96	0.136	0.166	0.493**
2	62	−0.008	0.165	0.303*
3	76	−0.076	0.028	0.307**
4	59	−0.034	0.152	0.119
5	52	0.014	0.057	0.357**
6	65	0.086	0.098	0.496**
7	37	−0.333*	−0.143	0.078
8	33	0.107	−0.100	0.348*
9	63	0.139	−0.124	0.451**

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Table 9. Mann–Whitney test comparing the behaviour of students who take life sciences and students who do not take life sciences

	Ranks				Test statistics[a]	
	Students	*N*	Mean rank	Sum of ranks	Mann–Whitney *U*	35,429.000
Behavioural preferences	Non-biology	243	267.80	6,5075.00	Wilcoxon *W*	65,075.000
	Biology	300	275.40	8,2621.00	*Z*	−.577
	Total	543			Asymp. sig. (2-tailed)	.564

[a]Grouping variable: biology.

insignificant difference between biology and non-biology students' self-reported safe behavioural preferences. This further indicates that the HIV/AIDS knowledge reported in the study is not related to students' behaviour.

Discussion

The major finding of the current study was that scientific HIV/AIDS knowledge does not always correlate with reported safe behavioural preferences of students. This is in agreement with scholars (Ajzen 1991; Hansen, Jensen, and Solgaard 2004; Shortell et al. 2004; Page, Ebersohn, and Rogan 2006; Guo et al. 2007), who have suggested that knowledge alone does not influence behaviour. This also echoes view that science literacy alone will not affect morality, character and citizenship. This study demonstrates, therefore, that within the HIV/AIDS realm, availability of scientific knowledge alone does not translate to safe behavioural preferences. Furthermore, scientific knowledge does not give an advantage to those who have it in terms of safe behavioural preferences. Instead, it appears that any available knowledge (either scientific or generic) related to HIV/AIDS may correlate with safe behaviour as reported in the study.

The researchers believe that in certain contexts scientific knowledge may be one of many local factors, including those listed in the theory of planned behaviour, which collectively affect HIV/AIDS-related behavioural preferences. Consequently, when all other factors are considered, the role of knowledge on behaviour is lessened as predicted by the theory of planned behaviour. Page, Ebersohn, and Rogan (2006, 106) agrees with this notion by suggesting that 'the biological disposition and intrapersonal factors of the individual, close friends and family' have a greater influence on behaviour than 'macrosystem of factors such as culture and the state's welfare system'.

Furthermore, it is apparent that there is a shared factor among students, which is responsible for the common behavioural preferences even though their HIV/AIDS knowledge was different (as demonstrated between the two groups and within schools). According to Margolis (2001), Lempp and Seale (2004) as well as Kentli (2009), schools from a similar geographical area (such as is the case with the participating schools) may share factors, such as the hidden curriculum, particularly among classrooms within schools. Regarding the hidden curriculum, Jackson (1968), Margolis (2001) and Kentli (2009) argue that students learn various interpersonal and intrapersonal skills and also develop values, norms and belief systems through the hidden curriculum. The hidden curriculum itself is socially constructed and influenced by social contexts. Therefore, students' values, social expectations, behaviour, identity, social functioning and self-efficacy are determined by the hidden curriculum. In fact, Massialas (1996) argues that up to 90% of student socialisation is due to the hidden curriculum. These views further indicate that there may be context-specific local factors that are influencing students' behavioural preferences, as our data shows.

The implication, therefore, is that any attempt to affect students' HIV/AIDS-related behaviour cannot rely on providing knowledge only; neither can it reject it outright. Instead, the type of knowledge that must be provided must be informed by context-specific dynamics, including classroom dynamics and other social factors. Furthermore, for science to effectively affect everyday life, a more integrated approach may be necessary. The study has shed light on the significance of scientific knowledge on social issues in South Africa, particularly within the context of HIV/AIDS. There is a need, however, to determine how the correlation between scientific knowledge (including HIV/AIDS Knowledge) and everyday life (including behavioural preferences of student) could be improved, particularly in developing countries such as South Africa.

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