African Journal for Physical, Health Education, Recreation and Dance (AJPHERD) Supplement 2:1 (October), 2014, pp. 44-58.

Concept mapping: Stakeholders` perceptions of what should be included in interventions programmes aimed at reducing engagement in health risk behaviour amongst youth

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Abstract

Engagement in health risk behaviours (HRBs) amongst young people is increasing despite numerous programmes to address such behaviours. The active engagement of multiple stakeholder groups, including youth, in articulating the content of youth development programmes, is thought to significantly increase buy-in, participation and success of intervention programmes. This article reports on a modified concept mapping study that used seven interviews with five teachers and two community leaders, as well as three focus groups with 32 learners with three stakeholder groups (youth, youth community programme leaders, and teachers). The stakeholders were asked to identify the content that they believe should be included in youth development programmes in order to succeed in reducing, delaying or preventing engagement in HRBs in the South African context. The findings of a thematic content analysis indicated that programmes aimed at effectively combating HRBs amongst youth should include content on four major aspects or themes: 1) HRBs that the learners engage in; 2) perceived reasons why youth engage in HRBs; 3) places of exposure to health risk behaviour; and 4) specific content or focuses. A concept map with four subsidiary quadrants was distilled and illustrated in a visual-special network representative of concepts and relations between the concepts that create propositions of stakeholders' perceptions of what should be included in the content of proposed programmes.

Keywords: Stakeholders, health risk behaviour, youth, intervention programmes.

How to cite this article:
Pharaoh, H., Frantz, J.M. & Smith, M. (2014). Concept mapping: Stakeholders` perceptions of what should be included in interventions programmes aimed at reducing engagement in health risk behaviour amongst youth. *African Journal for Physical, Health Education, Recreation and Dance,* October (Supplement 2:1), 44-58.

Introduction

There is general consensus among researchers (Zulkifli & Wong, 2002; Reddy et al., 2010) that engagement in health risk behaviours amongst youth is a concern from a public health perspective. Incidence studies report an increase in lifetime use of drugs and substances, as well as an overall increase in engagement in health risk behaviours amongst young people (Wiefferink et al., 2006; Driskell et al., 2008; Peters et al., 2009). Responses to the reported increase include, but are

not limited to: 1) prioritising interventions for youth at risk by dedicating resources to empower youth to take an active role in their health and modify their lifestyles in order to facilitate behavioural change; 2) consolidating resources aimed at promoting pro-social behaviour and overall health and wellbeing amongst youth; 3) developing programmes, including community programmes and school-based extracurricular activities, that can serve as contexts to provide important developmental benefits for adolescents; and 4) adopting a more critical evaluation of interventions and programmes aimed at youth development (Durlak, Weissberg & Pachan, 2010; Zarrettet al., 2009). These responses have used psycho-education and knowledge dissemination as the primary method of effecting behaviour change.

Visser, Schoeman and Perold (2004) in a study evaluating the HIV/AIDS prevention programmes in secondary schools in South Africa indicated that secondary school learners have a basic knowledge of HIV/AIDS, but knowledge alone is not enough to assure "safe" sexual behaviour. It is of utmost importance that participants be skilled to put that knowledge into practice. Programmes aimed at addressing the concerns of the youth must adopt "an approach that goes beyond the health sector" and must actively facilitate the participation of the youth as change agents (Begley, Haddad, Christensen & Lust, 2009). Programmes that take a community youth development approach create opportunities for young people to connect with others, develop skills, and use those skills to contribute to their communities, which in turn increases their ability to succeed (Perkins & Borden, 2003).

Various youth development programmes exist to address health risk behaviours (Harrison, Smit & Meyer, 2000). However, there is great variation as to the content or focus that these programmes currently have and should have. Some programmes emphasise skills development or asset building (Harrison et al., 2000) while others emphasise harm or deficit reduction (Gurstein, Lovato & Ross, 2003). Benson (1997) reviewed theoretical and applied researches, and concluded that an "asset building paradigm" holds equal weight with a "deficit reduction paradigm." The focus should be placed on promoting positive youth development, as well as reducing problem behaviours in youth. Regardless of the focus of intervention programmes, there is an increasing commitment to involve stakeholders in the development, implementation and evaluation of programmes (Howard, Newman, Harris & Harcourt, 2002; Harrison et al., 2000).

Conceptualising young people as partners and decision-makers is founded on the belief that their engagement is critical for achieving optimal outcomes (Gurstein et al., 2003). Literature has emphasised that organised youth programmes, including community programmes and school-based extracurricular activities, are contexts that can provide important developmental benefits for adolescents (Durlak, Weissberg & Pachan, 2010; Zarrett et al., 2009). Perkins and Borden

(2003) define community youth development programmes as "purposeful environments that provide beneficial, positive, and encouraging positive relationships with adults and peers that are sustained". At the same time, they provide an array of opportunities that enable youngsters to build their skills and competencies, as well as enabling them to become engaged as partners in the development of themselves and their communities. Engaging multiple stakeholder groups in articulating the needs and content of a youth development programme is important in ensuring full participation. This article reports on an exploratory study to understand the views of stakeholders in identifying the content of a proposed youth development programme. The objective of this study was to compare and contrast responses across three participant groups (youth, youth community programme leaders, and teachers) in order to develop a concept map that could inform the focus or content of a proposed youth development programme.

Concept mapping is an action research approach in which the research participants are encouraged to freely externalise the relationships among the concepts in their mind (Rebich & Gautier, 2005). The process of concept mapping is sensitive to the structural nature of participants' knowledge (Patton, 1990) and in participants' minds, misconceptions or alternative concepts can be identified (Duit, Treagust & Mansfield, 1996). Concept maps can be used to qualitatively depict the knowledge structures of mapmakers (stakeholders) through the explicit illustration of a "visuo-spatial" network of propositions (Duit et al., 1996).

Englebrecht et al. (2005) describe concept mapping as a descriptive approach with five distinct phases. These are: a preparation phase; a generation or brainstorming phase; a structuring phase where statements are sorted and ranked on the dimensions of importance for the study; an analysis phase which results in a concept map; and finally an interpretation phase where the results are analysed in a session guided by a facilitator.

Methodology

Research design

The present study used a modified version of concept mapping to identify qualitative concepts from sessions with identified stakeholder groups. During the preparation phase the authors read extensively in the focus area of the study, to formulate the focus prompts. The second phase incorporated qualitative methods to generate participant responses to the focus prompts. The analysis phase incorporated thematic analyses of transcripts and the distilling of concepts generated from the three participant groups. This study employed a qualitative design, using focus group discussions and in-depth interviews.

Participants

The participant groups consisted of 32 secondary school learners aged 13-18 years, 4 high school teachers, a district representative involved in school-based programmes, and 2 community leaders involved in youth development. Participants were purposively selected in order to get a sample that would provide in-depth information.

Procedure

Three focus group discussions were conducted with a total of 32 learners, comprising a male group of 10 learners, a female group of 10 learners, and a mixed-gender group consisting of 12 learners (6 boys and 6 girls). Focus groups were conducted at the school, which was a convenient and familiar location. At each session, a short description of the purpose of the project was given to familiarise participants with the process that was planned. The facilitator asked participants to respond to stimulus questions. The questions focused on the following: "The reasons learners engage in health risk behaviour and interventions needed to assist in combating health risk behaviour among learners." Sessions were audio-recorded and lasted an average of one hour. In addition, semi-structured interviews were conducted with 5 purposively selected teachers and 2 community leaders from community organisations such as Non Govermental Organisations involved with Life Skills training programmes among the youth.

The study was approved by the Research Ethics Committee of the University of the Western Cape (10/6/2). Participants responded to a written invitation to participate in the research. All participants received an information sheet about the study, and informed written consent was obtained from all participants, parents/guardians and statutory bodies, for example the Education Department, where appropriate.

Data analysis

Qualitative data analysis was undertaken by the authors. Focus group and interview transcripts were analysed using content analysis. To ensure that the data captured during this stage was trustworthy, member checking was done with the group in order to verify recorded responses. The member checking, notes and observations were carried out to enhance the validity of the study. Each of the authors independently identified recurrent themes as they emerged from the data. Following this, an analysis meeting was convened at which the themes identified by each author were compared and discussed. Following agreement on these, each author undertook a full analysis of approximately half the transcripts, with a

small overlap to allow for further comparison of the theme interpretation, and allocation of data extracts to particular themes. Themes were collated into four subsidiary concept maps that were graphically represented in one meta-figure.

Results

Demographic data of the participants

Teachers who participated in the study had teaching experience ranging from 5 to 25 years. Of the participating teachers, one was responsible for the sports administration in the school, one had been involved with the social problems of the learners for the past 10 years, and the other two teachers were involved in life orientation programmes at the school. An additional interview was conducted with a teacher who was responsible for implementing education and skills development programmes in schools, pertaining to prevention of HIV/AIDS and other health risk behaviours. Further interviews were conducted with two community leaders (one of whom was a school principal) from community organisations that were identified as important sources of information since they had an average of 10 years' experience in health risk behaviour and life skills programmes with young people.

Emerging themes

The findings demonstrated that participants felt that the content of programmes aimed at effectively combating health risk behaviours amongst youth should be informed by four major aspects or themes: 1) Health risk behaviours that youth engage in; 2) Perceived reasons why youth engage in health risk behaviours; 3) Places of exposure to health risk behaviour; and 4) Specific content or focuses.

Theme 1: Health risk behaviours that youth reportedly engage in

Participants felt that the content of proposed programmes should address information on the health risk behaviours that learners were currently engaged in. Table 1 reflects the most illustrative excerpts per stakeholder group per health risk behaviour.

A major theme that emerged was the perception that intervention programmes should include content that speaks to the reasons why youth engage in HRBs. Five distinct sub-themes were identified across all three groups of stakeholders. These themes were: peer pressure, role modelling, experimenting, dysfunctional homes, and communication.

Table 1: Health Risk Behaviours that youth engage in

Identified HRB	Challenge	Illustrative Quote
Smoking	Smoking has been identified as increasing, with a major impact on health	Smoking, drinking alcohol and sexual activity are the most common health risk behaviours (learner) "Smoking, drinking alcohol, drug use and sexual activity are the main health risk behaviours at our school" (teacher) "Smoking is a big problem in schools" (Community leader)
Sexual activity	Increased incidence of teenage pregnancy in schools as a result of unprotected sex that also poses a risk in terms of contracting STDs and HIV/AIDS	Smoking, drinking alcohol and sexual activity are the most common health risk behaviours. (learner) "In one year in the same grade at the same school ... there were more than 40 teenage girls who were pregnant" (teacher) "They are sexually active – have access to porn" (CL)
Crime	Increased engagement in behaviour and activities that are illegal	"Take part in crime due to peer pressure" (learner) Children are breaking into houses now (teacher) "Adults are using them to gather information to commit a crime, so these youth...not only boys...boys and girls are used to enter houses where bigger people cannot enter, so they are involved in crime from a very young age".(CL)
Violence	Conflict is resolved through violence rather than through prosocial skills	"Stress at home makes you take it out on someone else at school" (learner) "Conflict is resolved through violence". (teacher) "They engage in fighting" (CL)
Drug and alcohol use	Drug and alcohol use are increasing, and are thought to reduce the ability to make informed decisions about engaging in other behaviours that pose risks to the youth	" Alcohol makes you think you are strong" (learner) "Gangsterism and Tik are a huge problem in the area" (teacher) Hubbly bubbly, instead of putting in water they put in alcohol and instead of flavour they use marijuana (CL)
Obesity	Obesity poses a risk to health since it causes chronic diseases of lifestyle like hypertension that are increasingly diagnosed in younger people. This might relate to physical inactivity and poor impulse control related to eating	"obesity - causing high blood pressure" (CL)

Theme 2: Reasons why youth engage in health risk behavior

Table 2 reflects the themes and relevant excerpts associated with the themes.

Table 2: Perceived reasons why youth engage in health risk behaviours

Subthemes	Experience	Illustrative Quote
Peer pressure	Feeling of acceptance	” They don’t want to feel left out” (teacher) “ We fear being rejected by our friends” (learner) “Influence from friends” (Community Leader)
Role modelling	Poor role models	“I see the example from my parents who are drinking and smoking” (Learner) “Their role models in the community is the gangsters who use drugs, alcohol and have lots of sexual partners” (Teacher) “Parents having a very low morale, not good role models for children” (Community Leader)
Experimenting	Understanding by doing	“We also want to know how it feels to drink” (learners) “Learners express to me as a teacher that they will not be an addict and just want to know what it feels like to use drugs or drink alcohol.” (teacher) “for some of them their behaviour stems from I am experimenting” (CL)
Dysfunctional homes	Home environment does not provide support or evidence of prosocial behaviours and coping	“We engage in risky behaviours to escape from problems at home.” (learner) “The majority of the learners from this school come from homes where mum and dad both abuse alcohol and use drugs” (teacher) “Learners do not have family support.” (cl)
Communication	Not knowing how to express thoughts, feelings and emotions	“Due to the circumstances that the learners grow up in, they are not able to communicate what they feel and therefore have the tendency to express their frustration through violence. (teacher) “There’s a lack of communication in parents that may cause health risk behaviours in children.” (cl)

Theme 3: Places of exposure to health risk behaviour

Participants across all three subgroups felt that the content of effective programmes should identify the contexts, sources or places where youth are perceived to be exposed to various HRBs. From their responses it appeared that participants in all subgroups assumed that “exposure” referred to disruptive HRBs such as drinking/alcohol and drugs, and did not include other health risk behaviours such as physical inactivity. Table 3 summarises the places where youth were exposed to health risk behaviours, according to the three groups.

Table 3: Exposure to health risk behaviour

Learners	Teachers	Community Members
"Lots of parents allow children to drink at New Year or at family events" Fellow classmates bring alcohol or drugs to school or these sport events". "The public swimming pool is a place where our bags are not checked therefore we can smuggle alcohol in with us".	Learners have to get to sport events on their own thus affording them the opportunity to come drunk to the event as they drink at each other's homes beforehand". "Learners smuggle alcohol and drugs to school or sport events".	"We find that children as young as seven or eight years old are exposed to alcohol, especially over weekends, it is there, it is available and we try it". "The curiosity of a young inquisitive mind is a big thing. He does not need encouragement, he sees the bottle of beer standing there and the older brothers have finished half of it and is passed out. He is there with all but two or three of his friends and they just want to try it". "The same with smoking, the mother smokes and drinks and the boyfriend smokes and drinks. In that whole community it is not something that is frown upon, it is something that is accepted".

Theme 4: Specific content or focuses of proposed programmes

Participants stated that effective programmes should also include specific content that was reflected in three subthemes, namely: 1) Life skills; 2) Exposure to the effects of health risk behaviour; and 3) Literacy and expressive abilities. Life skills, as specific content to be included, were identified by all participants as integral. This content included four subthemes as illustrated in Table 4: a) ability or capacity in skills such as decision-making and resistance to peer pressure; b) identity concerns such as self-esteem and crisis management; c) internal locus of control; and d) executive functions that enable the delaying of gratification as priorities. The learners described a subjective experience, which was not a perception, which was clearly depicted by other stakeholders and which would greatly influence the analysis strategy and ultimately the concept maps – therefore why not use two distinct maps depicting the experience as lived by the learners and a perception-based map? This would highlight the similarities and differences far more clearly.

Table 4: Specific content thought to be included in proposed youth programmes

Subthemes	Experience	Illustrative Quotes
Life skills training	The acquisition of skills for prosocial living, and effective management of self and relationships could mitigate engagement in HRBs	"Youth development programmes that improve the life skills of learners are non-existent. Learners do not know how to cope with crisis in their lives". (teacher) "We would like to be taught how to cope with crisis in our lives. We do not know how to say no and want to belong". (learner) "Self equipping in learners: coping with crisis, decision-making, handling peer pressure, handling relationship pressure, and dealing with abuse." (CL)
Exposure to effects of HRB	Graphic or shocking visual or physical evidence of drug use is thought to be a deterrent to engaging in HRBs	"We need practical experiences. Take us to see people who are infected or are addicted to drugs" (Learner) "Learners need to practically see the consequences of health risk behaviour. They feel that it would never happen to them. They will not be addicted." (Teacher)
Literacy and expressive abilities	Increasing their abilities to express their thoughts and feelings in a prosocial manner	"Education: being educated helps you think about what is good and not good." (learners) "We need kids to read a lot more. In doing so they learn to express themselves better. They communicate better and their world becomes so much bigger" (teacher) "Special classes be presented at school" (CL)

Discussion

The results indicated that there was general consensus among the stakeholders with regard to the content that should be included in effective programmes, as illustrated by the common concepts identified across the groups. The findings suggested that examining the health risk behaviours youth are currently engaged in would enhance the effectiveness of programmes. This view is consistent with how programme development has been approached, and forms a shared starting point for facilitators (Zulkifli & Wong, 2002). The particular HRBs identified by participants were similar to those identified in other national and international studies and included smoking, alcohol consumption, risky sexual behaviour, teenage pregnancy, crime, violence, and substance abuse (Pharaoh, Frantz & Smith 2011; Reddy et al., 2010).An important observation that emerged clearly was the conclusion that programme content had to be matched with the target group and context. For example, in certain suburbs in South Africa, crime and violence are rife, and are engaged by many youth as an HRB. Programme content in such areas should then prioritise addressing violence and crime. Thus in order for the content of programmes to be contextually relevant, it must begin to address the HRBs in which the target group is engaged.

The findings suggested that programme content should include the pathways to engagement in HRBs. The second and third themes identified such pathways through the reasons why youth engage in HRBs (theme 2) and the places of exposure to HRBs (Theme 3). Programme content should address peer pressure, role modelling, experimentation, dysfunctional homes, and communication, as the five reasons identified for adolescent engagement in HRBs.

The inclusion of peer pressure is important, because adolescence is characterised by a normative shift from identification with parental or familial relationships to peer relationships (Sadock & Sadock, 2003). Traditionally, programme content has focused on the role of negative peer influence in anti-social behaviour, and almost assumed that peer pressure was negative by definition (Swadi & Zeitlin, 1988). Therefore it would be useful for programme content to make the distinction between positive and negative peer influences, while normalising the need to identify with peers (Valenteet al., 2007). In this way, programme content can validate normal adolescent processes and highlight the role of peer influence on decision-making, particularly with regard to engagement in health risk behaviour.

Traditionally, programme content has focused on the negative impact of role modelling in sanctioning engagement in HRBs. The notion of "doing it because we see it" has become a commonly accepted view explaining why youth engage in HRBs, as formulated in social learning theory popularised in the early 90s (Kumpfer & Turner, 1990) as well as by participants in the study. Another important concept that emerged was experimentation. The experimentation idea is consistent with the gateway conceptualisation of substance use included in traditional programme content, where experimental use of alcohol and nicotine leads to the use of more serious substances, abuse, and dependency (Torabi, Bailey & Majd-Jabbari, 1993).

The role of the family was identified by participants for inclusion in the content of programmes aimed at intervening in engagement in HRBs amongst youth. The notion that dysfunction in the home environment negatively affects adolescents, who in turn engage in HRBs in order to self-medicate the impact of a dysfunctional home, was consistent with literature (Orriols, Gaillard, Lapeyre-Mestre & Roussin, 2009) that has been used traditionally to justify its inclusion in programme content. Closely related to this is the ability or inability of youth to express their thoughts and emotions, which leads to frustration that is then expressed by anti-social means such as violence (Stoltz, 2013). Participants perceived that programmes where the content addresses the expressive abilities of adolescents as it relates to emotion regulation, and the mediation of the impact of a dysfunctional home, might increase their effectiveness

Another area that emerged was the context where youth were exposed to health risk behaviour, and this included peer groups, the family, and communities. Peer groups provide both opportunity and exposure to various HRBs (Reddy et al., 2010). The participants indicated that in the family context, learners are not only exposed to HRBs through modelling or observation, but are also invited to participate in the HRBs by parents and figures of authority. This radically alters the boundaries between parent and youth subgroups, and dramatically undermines the authority of the parent subgroup in challenging their children's engagement in HRBs (Smetana & Asquith, 1994). In supervised contexts such as family homes, schools and youth groups, inadequate supervision and/or monitoring create opportunities for engaging in HRBs, such as drinking at a school event. This is consistent with Burlewet al., 2009) who conclude that the role of supervision is integral in adolescent engagement in HRBs. Thus the findings indicate participants' perception that programmes that address places of exposure to HRBs might be more effective in combatting engagement in HRBs.

Participants had clear perceptions about the content that should be included in youth development programmes. Important to note was the criticism lodged against existing programmes run by community members and the teacher subgroups, that existing programmes do not sufficiently, if at all, address the development of life skills as a specific focus Thus, making stakeholders engage or buy less into programmes being offered as they perceive it to not address their current life skill needs. With regard to the content of the programme, it was clear that life skills and more graphic or shocking exposure to the effects of engaging in health risk behaviour, were perceived as more valuable. Though all three subgroups commented on literacy, the learners perceived this to be more like "education" which somehow reduces vulnerability to engagement in HRBs. The teacher- and community leader-subgroups were able to articulate clearly that increased literacy levels translated into an increased ability to express and articulate their thoughts and feelings, as well as to establish the link between their thoughts, feelings and behaviour. This would enable them to engage more prosocially, using a range of life skills rather than engaging in HRBs as an escape from their internal and contextual challenges.

In most cases a fairly consensual picture emerged across the three subgroups, though there was some differentiation in the way respective subgroups thought about the routes to engagement in health risk behaviours. The contributions of each subgroup reflected their relative positions regarding engagement in HRBs amongst youth.

Concept maps

Based on the information that emerged from the present study, four concept maps were distilled from the results discussed above. The matrix presented

below is a summary of the concept maps which emerged from the data (Figure 1). Each quadrant represents a concept map that corresponds to the themes discussed above, and they are conceptualised as interacting with one another. The derived concept map suggests that the development of programme content should start with contextual relevance achieved by understanding the range of HRBs that youth engage in. This allows for an exploration of the pathways in which engagement has come about. The second and third quadrants illustrate this in their focus on the reasons why youth engage in HRBs and the places where they are exposed to HRBs. Once the content has addressed what they do and why they do it, the process of skills development can begin to combat engagement in HRBs.

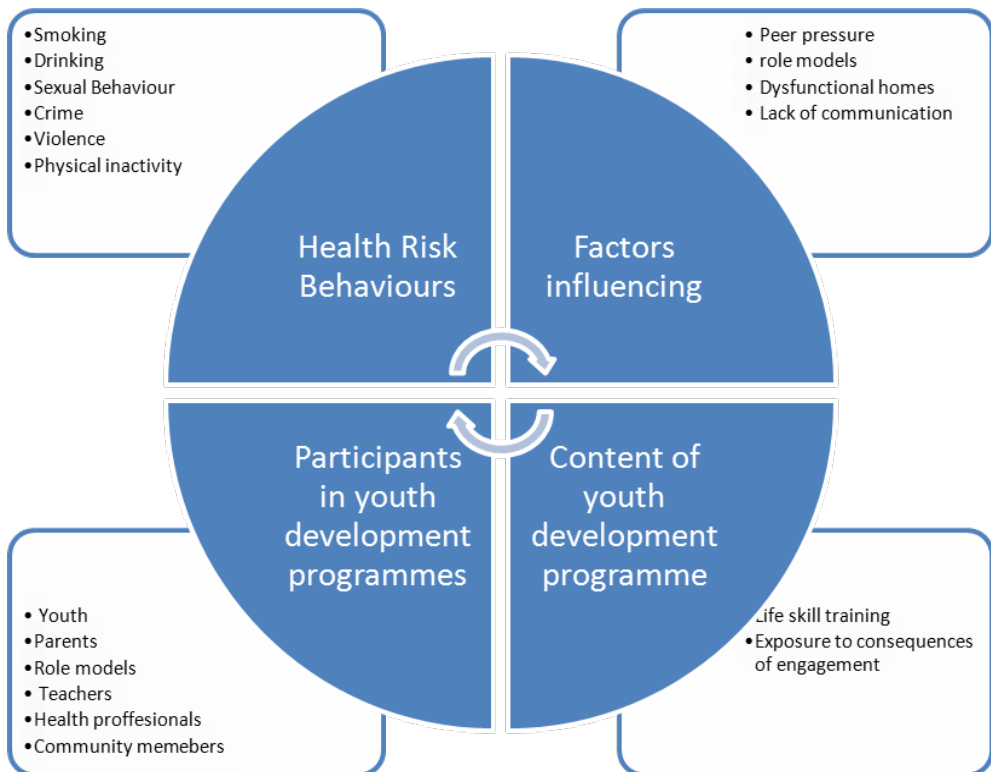

Figure 1: Concept map

Conclusion

This article reports on a modified concept mapping study that used qualitative methods of data collection and analysis to garner the perceptions of stakeholders about the content that should be included in the proposed programmes aimed at combatting engagement in HRBs among youth. The findings revealed that participants felt that the content of programmes aimed at effectively combatting

HRBs amongst youth, should include four major aspects or themes: 1) HRBs that learners engage in; 2) perceived reasons why youth engage in HRBs; 3) places of exposure to health risk behaviour; and 4) specific content or focuses. Four concept maps were distilled that were visually illustrated in an overarching figure of networks representing concepts and relations between propositions of stakeholders' perceptions about what should be included in the content aimed at combating HRBs amongst youth.

References

Benson, P.L. (1997). *All kids are Our Kids: What Communities Must do to Raise Caring and Responsible Children and Adolescents*. San Francisco, CA: Jossey-Bass.

Begley, K., Haddad, A.R., Christensen, C. & Lust, E. (2009). Health education program for underserved community youth led by health professions students. *American Journal of Pharmaceutical Education*, 73(6), 98.

Brook, J.S., Kachieng'a, M.A. & Morojele, N.K. (2006). Perceptions of sexual risk behaviours and substance abuse among adolescents in South Africa: A qualitative investigation. *Routledge*, 18(3), 215-219.

Burlew, A.K., Johnson, C.S., Flowers, A. M., Peteet, B.J., Griffith-Henry, K. D. & Buchanan, N.D. (2009). Neighborhood Risk, Parental Supervision and the Onset of Substance Use among African American Adolescents. *Journal of Child and Family Studies,* 18 (6)*,* 680-689.

Chalk, R. & Phillips, D.A. (1996). National Research Council. *Youth Development and Neighborhood Influences: Challenges and Opportunities*. Washington, DC: The National Academies Press.

Cooper, M.L. (2006). *Does Drinking Promote Risky Sexual Behaviour? A Complex Answer to a Simple Question*. Columbia: Sage Publications.

Cooper, M.L. (2009). Motivation for alcohol use among adolescents: Development and validation of a four –factor model. *Psychol. Assess*, 6, 117-128.

Cooper, M.L. (2010). *Alcohol Use and Risky Sexual Behaviour among College Students and Youth: Evaluating the Evidence*. Columbia: Department of Psychology.

Driskell, M.M., Dyment, S., Mauriello, L., Castle, P. & Sherman, K. (2008). Relationships among multiple behaviors for childhood and adolescent obesity prevention. *Preventative Medicine*, 46, 209-215.

Duit, R., Treagust, D.F. & Mansfield, H. (1996). Investigating student understanding as a prerequisite to improving teaching and learning in science and mathematics. In D. F. Treagust, R. Duit & B. J. Fraser (Eds.), *Improving Teaching and Learning in Science and Mathematics* (pp. 17 - 31). New York and London: Teachers College Press.

Durlak, J. A., Weissberg, R. P. & Pachan, M. (2010). A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology,* 45, 294–309.

Engelbrecht, A.C., Mintzes, J.J., Brown, L.M. & Kelso, P.R. (2005). Probing Understanding in Physical Geology Using Concept Maps Clinical Interviews. *Journalof Geoscience Education*, 55, 3, p.263-270.

Gurstein, P., Lovato, C. & Ross, S. (2003). Youth participation in planning: Strategies for social action. *Canadian Journal of Urban Research*, 12(2), 249–274.

Harrison, A., Smit, J.A. & Myer, L. (2000). Prevention of HIV and AIDS in South Africa a review of behaviour change interventions, evidence and options for the future. *South African Journal of Science*, 96, 285-290.

Howard, S., Newman, L., Harris, V. & Harcourt, J. (2002). Talking about youth participation—where, when and why? *In Proceedings of the Australian Association for research in education conference.* University of Queensland (unpublished), retrieved May 02, 2012 from http://www.aare.edu.au/02pap/how02534.htm.

Kumpfer, K.L. & Turner, C.W. (1990). The Social Ecology Model of Adolescent Substance Abuse: Implications for prevention. Substance Use and Misuse, 25 (4), 435-463.

Kowalski, K. M. (1999). How peer pressure can affect you. *Current Health Magazine,* Weekly Reader Corp.

Madray, H. & Van Hulst, Y. (2000). Reducing HIV/AIDS high-risk behavior among injection drug users: Peers Vs. Education. *Journal of Drug Education*, 30(2), 205-211.

McBride, N., Midford, R., Farringdon, F. & Phillips, M. (2003). Harm minimization in school drug education: Final results of the School Health and Alcohol Harm Reduction Project (SHAHRP). *Addiction*, 99, 278–291.

Orriols, L., Gaillard, J., Lapeyre-Mestre, M. & Roussin, A. (2009). Evaluation of abuse and dependence on drugs used for self-medication. *Journal of Drug Safety*, 32(10), 859-873.

Perkins, D. F. & Borden, L. M. (2003). *Positive Behaviors, Problem Behaviors, and Resiliency in Adolescence. Handbook of Psychology*, pp. 373–394.

Peters, L.W.H., Kok, G., Ten Dam, G.T.M., Buijs, G.J. & Paulissen, T.G.W.M. (2009). A review of similarities between domain specific determinants of four health behaviors among adolescents. *Health Education Research*, 24, 198-223.

Pharaoh, H., Frantz, J. & Smith, M. (2011). Life skills as predictors of engagement in health risk behaviours: A survey of secondary school learners. *African Journal for Physical, Health Education, Recreation and Dance*, June (Supplement), 70-81.

Reddy, S.P., James, S., Sewpaul, R., Koopman, F., Funani, N.I., Sifunda, S., Josie, J., Masuka, P., Kambaran, N.S. & Omardien, R.G. (2010). *Umthente Uhlaba Usamila – The South African Youth Risk Behaviour Survey 2008*. Cape Town: South African Medical Research Council.

Rebich, S., & Gautier, C. (2005). Concept mapping to reveal prior knowledge and conceptual change in a mock summit course on global climate change. *Journal of Geoscience Education*, 53(4), 355.

Sadock, B.J. & Sadock, V.A. (2003). *Synopsis of Psychiatry: Behavioral Science/ Clinical Psychiatry* (9th ed.). Philadelphia: Lippincott Williams& Wilkins.

Swadi, H. & Zeitlin, H. (1988). Peer influence and adolescent substance abuse: A promising side? *British Journal of Addiction,* 83 (2) 153-157.

Smetana, J. G. & Asquith, P. (1994). Adolescents' and Parents' Conceptions of Parental Authority and Personal Autonomy. *Child Development,* 65, 1147–1162. doi: 10.1111/j.1467-8624.1994.tb00809.x

Stoltz, J. (2007). Masculinity and School Violence: Addressing the Role of Male Gender Socialization. *Canadian Journal of Counselling and Psychotherapy / Revue canadienne de counseling et de psychothérapie*, North America. Available at: http://cjcrcc. ucalgary.ca/cjc /index.php/rcc/article/view/268. Date accessed: 31 Mar. 2013.

Torabi, M. R., Bailey, W. J. & Majd-Jabbari, M. (1993). Cigarette Smoking as a Predictor of Alcohol and Other Drug Use by Children and Adolescents: Evidence of the "Gateway Drug Effect". *Journal of School Health*, 63, 302–306. doi: 10.1111/j.1746-1561.1993.tb06150.x

Valente, T.W., Rilt-Olsen, A., Stacy, A., Unger, J.B., Okamoto, J. & Sussman, S. (2007). Peer acceleration: Effects of a social network tailored substance abuse prevention programme. *Addiction*, 102 (11), 1804-1815.

Visser, M.J., Schoeman, J.B. & Perold, J.J. (2004). Evaluation of HIV/AIDS Prevention in South African Schools. *Journal of Health Psychology,* 9(2), 263–280.

Wiefferink, C.H., Peters, L., Hoekstra, F., Ten Dam, G., Buijs, G.J. & Paulussen, T.G.W.M. (2006). Clustering of health-related behaviors and their determinants: possible consequences for school health interventions. *Preventative Science*, 7, 127-149.

Zarrett, N., Fay, K., Li, Y., Carrano, J., Phelps, E. & Lerner, R. M. (2009). More than child's play: Variable- and pattern-centered approaches for examining effects of sports participation on youth development. *Developmental Psychology*, 45, 368 –382.

Zulkifli, S.N. & Wong, Y.L. (2002). Knowledge, attitudes and beliefs related to HIV/AIDS among adolescents in Malaysia. *The Medical Journal of Malaysia,* 57(1), 3-23.