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A narrative systematic review of life skills education: effectiveness, research gaps and priorities

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ABSTRACT

A systematic review was conducted to investigate the literature on effectiveness of life skills programs. The aim of this review was to gain a comprehensive understanding on the effectiveness of life skills education globally, and to identify research gaps and priorities. Findings revealed differences in life skills education within developing countries and developed countries. In general, developed countries conduct more systematic life skills education programs promoting positive behavior, with research articulating outcomes on individual youth. In contrast, the majority of developing countries' life skills programs lack systematic implementation, evaluation and monitoring. Programs are often conducted to yield short term results only. This review will be useful to administrators, policy makers, researchers and teachers to implement effective life skills programs. The findings can be used as inputs for developing sustainable life skills programs to ensure transfer of knowledge and skills.

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youth; positive behaviour;
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Introduction

Adolescents who face personal, cognitive and social skills deficits are prone to drug use, bullying, violence, STIs, HIV, AIDS, malnutrition and other socio-economic and environmental challenges. Specific emotional, cognitive, behavioural and resilience skills play a vital part in ensuring an adolescent's personal and social success (Langford & Badeau, 2015; McWhirter, McWhirter, McWhirter, & McWhirter, 2007; WHO, 1993). Likewise, psychosocial skills allows individuals to recognize, interact, influence and relate to others in different environments. Children and adolescents with psychosocial skills have positive mental health and wellbeing (Savoji & Ganji, 2013; WHO, 1993). Additional skills, such as emotional, cognitive, behavioral and resilience development in adolescents will help them navigate their psychological push backs for high risk behaviour and negative mental wellbeing (WHO, 2016). Life skills has been identified as an essential resource for developing psychosocial, emotional, cognitive, behavioral and resilience skills to negotiate every day challenges and productive involvement in the community (Desai, 2010; Galagali, 2011). These skills are known to be key contributors to negotiating and mediating challenges that young people face in becoming productive citizens (Prajapati, Sharma, & Sharma, 2017; Savoji & Ganji, 2013; WHO, 1993).

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There is a growing demand to educate adolescents with life skills to help them deal with their day to day life challenges and transition into adulthood with informed healthy choices. Demonstrating its effectiveness, significance and value, life skills has become a major part of many intervention programs around the globe, particularly those aimed at the prevention of alcohol abuse, drugs and smoking (Botvin & Kantor, 2000; Huang, Chien, Cheng, & Guo, 2012; Mandel, Bialous, & Glantz, 2006). Additionally, life skills programs have been implemented in the context of multiple programmatic settings such as sports, at-risk behaviour, and sexual and reproductive health programs (Jones & Lavallee, 2009).

Although life skills programs have proliferated around the world little is known about the efficacy and effectiveness of these programs on individual behaviour and attitude. The skills developed through life skills are micro behaviours and their acquisition is rarely assessed (UNICEF, 2012). Most research (Botvin & Kantor, 2000; Huang et al., 2012; Mandel et al., 2006) on life skills focuses on program effectiveness rather than the learners' experiences both in and following their time with the program. Therefore, determining acquisition of knowledge, skill and attitude change as a result of life skills program is essential to identify how life skills programs are designed to ensure attainment of program content and knowledge. While there are a number of studies (Giannotta & Weichold, 2016; Weichold & Blumenthal, 2016; Weichold, Tomasik, Silbereisen, & Spaeth, 2016; Wenzel, Weichold, & Silbereisen, 2009) identifying the effectiveness of life skills programs, further research is required to identify what and how life skills effectiveness is determined. As such there is a need to review the literature systematically, in order to synthesize the available research on the effectiveness of life skills education with an eye toward advancing our understanding of what and how life skills effectiveness is determined and to identify research gaps and priorities for moving forward. Therefore, this paper examines the published literature on the effectiveness of life skills programs conducted with adolescents 10 to 19 years old.

What is life skills education?

The goal of life skills education is to equip individuals with appropriate knowledge on risk taking behaviours and develop skills such as communication, assertiveness, self-awareness, decision-making, problem solving, critical and creative thinking to protect them from abuse and exploitation (UNICEF, 2015; WHO, 1993). Life skills programs are conducted with a focus on specific life skills, depending on the setting. For example, in countries like the United States, United Kingdom, Germany, Greece, and Mexico special life skills education programs are designed to promote positive refusal skills and effective decision-making around smoking, alcohol, drug abuse, HIV, AIDS, contraception, perception about sexual activities and condom use (Botvin, Griffin, Diaz, & Ifill-Williams, 2001; Campbell-Heider, Tuttle, & Knapp, 2009; Givaudan, Leenen, Van De Vijver, Poortinga, & Pick, 2008; MacKillop, Ryabchenko, & Lisan, 2006; Martin, Nelson, & Lynch, 2013; Menrath et al., 2012).

In contrast, developing countries such as India, Sri Lanka, Maldives, Bangladesh, Thailand, Myanmar and Nepal incorporate life skills concepts into their curriculum at different grade levels (WHO, 2001). These life skills programs are designed and conducted in sequential order by component, with an emphasis on everyday skills such as communication, which is a basic level skill. Application of skills related to health and social issues such as gender roles are considered as intermediate level skills. Further, the advanced level application of life skills such as those in relation to risk behaviours (e.g. drugs and smoking) are taught last (WHO, 1993). Likewise, countries in the Asia and Pacific Regions, for instance, combine life skills into comprehensive Sexuality Education (CSE) programs to reduce risk behaviour and improve the health and well-being of young people (UNFPA, 2015).

Consequently, life skills takes on a contemporary approach to teach health and other social issues (WHO, 2001), which are delivered in multiple ways. For instance, Life Skills Education (LSE) as proposed by the World Health organization, is an educational intervention that is designed to address life skills focus areas with needs- and outcome-based participatory learning (UNICEF, 2003, 2015). The main goal of LSE is to develop positive and adaptive behaviour by supporting individuals to practice and cultivate psychosocial skills that can reduce risk and capitalize on constructive behaviour (Munsi, Guha, Bengal, & Bengal, 2014; Prajina, 2014). The life skills education approach contours on how young people learn

from their own experiences and from the people around them (WHO, 1993). Drawing on Bandura's social learning theory, skills are learnt through interaction, processing and structuring of experiences (Aparna & Raakhee, 2011; Prajapati et al., 2017). Therefore, life skills is designed to be taught through experiential learning such as role play, modelling and practice.

Life Skills Based Education (LSBE) is an approach used to address specific content to achieve a certain goal (UNICEF, 2003). For example, life skills-based HIV/AIDS education aims to impart knowledge about HIV and AIDS through holistic learning experiences aimed at developing not only knowledge and attitudes but also the skills needed for an individual to make informed decisions for positive behaviour change (UNICEF, 2012). LSBE is interchangeably used with skill-based health education and is often used to address a wide range of topics significant to children, adolescents, youth and adult development.

The main difference between LSE and LSBE is the approach. In LSBE, teaching methods and activities are used to help learners develop the necessary psychosocial skills to acquire knowledge and develop the right attitude for positive behaviour change. Additionally, LSBE enhances the value and importance of traditional subjects such as literacy and numeracy along with social issues such as HIV/AIDS, gender, peace and environment, equality and sustainable development. LSBE focuses on the development of critical thinking, analytical thinking and negotiation skills in managing information, knowledge and experiences in various areas of life (UNESCO, 2008).

One of the more recent approaches to teaching life skills is through infusion. Infusion integrates preventive objectives and activities into academic activities in such a way that the content and skills that the learners acquire are spread across different teachers (Smith et al., 2004). The fundamental objective of the infusion approach is to teach learners how to translate information and concepts they learn in school into their daily life. Thus, life skills contents are infused into the basic subjects of the school curriculum with an innovative delivery method (Smith et al., 2004). Unlike the LSE where content is delivered in number of sessions, the life skills infusion approach does not limit the content into number of sessions but rather assures that all components are distributed across subjects through diversification in delivery methods. Infusion has been shown to be effective in reducing smoking, binge drinking, and use of marijuana (Botvin & Kantor, 2000; Smith et al., 2004; Vicary et al., 2004) and as a result 145 countries have integrated life skills into their primary and secondary curricula (UNICEF, 2012). However, for an infusion approach to be effective it needs to be designed well and delivered age appropriately (Konkel, 2016). Further, the infusion approach to teaching life skills is limited to the school setting as findings cannot yet be generalized to other settings (Bwayo, 2014; Konkel, 2016).

Examples of life skills programs

Life skills programs have been implemented via multiple focal areas such as sports settings, risky behaviours, and sexual and reproductive health (Jones & Lavalley, 2009). Nevertheless, all life skills programs aim to serve the same purpose, which is to help individuals overcome challenges and grow into healthy human beings. For example, the Positive Adolescents Life Skills (PALS) program is based on a cognitive-behaviour skill building intervention that sets out to change behavior by improving social skills (Tuttle, Campbell-Heider, & David, 2006). The program consists of 25 cognitive behavioral skill building sessions that are divided into five units comprised of basic communication, network skills, cognitive skills, problem solving skills and assertiveness (Campbell-Heider et al., 2009). The PALS program has been found to be effective with teens in their everyday lives (Campbell-Heider et al., 2009; Tuttle et al., 2006).

IPSY (Information + Psychosocial Competence = Protection) is a universal school-based life skills program that aims to delay the onset and reduce consumption of alcohol and tobacco during adolescence (Weichold, 2014; Wenzel et al., 2009). IPSY is a combination of intra- and interpersonal life skills, and substance reduction skills such as resistance skills, school bonding, knowledge and prevention of substance abuse (Weichold, 2014). Further, IPSY is considered an effective intervention against the use of tobacco and drugs among adolescents (Giannotta & Weichold, 2016; Weichold & Blumenthal, 2016; Weichold et al., 2016; Wenzel et al., 2009).

Fit and Strong for Life, developed by Ahrens-Eipper et al. in 2002, is a well-established modular life skills program conducted for primary and secondary schools in Germany (Cina et al., 2011). Lions Quest, developed by Wilms and Wilms in 2004, aims to foster life skills and self-efficacy and include the prevention of substance abuse such as cigarettes, alcohol, and drug consumption as their primary objective (as cited in Menrath et al., 2012). Fit and Strong for Life covers topics such as communications skills, coping with stress and emotions, self-esteem, empathy, resistance skills, decision-making, critical thinking skills, and health education (Cina et al., 2011). This program is targeted to primary and secondary school children whereas Lions Quest is delivered to secondary school students with topics such as self-esteem, self-efficacy, coping with emotions, decision-making, and inter and intra relationships. Both programs have been found to be effective in reducing tobacco use but no effects have been found on the development of health-related behaviours, social competencies, self-efficacy or overall behavioural improvement (Cina et al., 2011; Eisen, Zellman, & Murray, 2003; Menrath et al., 2012).

Life Skills Training (LST), developed by Botvin, focuses on adolescent substance abuse behaviours. The main aim of the program is to provide alternatives to risky behaviours rather than just providing information about alcohol, drugs and smoking. Botvin's Life Skills Training program is designed to teach adolescents the necessary skills needed to resist peer influences on the use of smoking, drinking and using drugs. Through skill building activities, adolescents develop self-esteem and self-confidence to effectively cope with stress and anxiety (Botvin, Dusenbury, Baker, James-Ortiz, & Kerner, 1990; Botvin & Griffin, 2004; Epstein, Griffin, & Botvin, 2000; Griffin & Botvin, 2014; Griffin, Botvin, Scheier, Epstein, & Doyle, 2002). Comprehensive Sexuality Education (CSE) aims to reduce risky behaviour and improve health and wellbeing of young people (UNFPA, 2015). The contents of the CSE program include reproductive health and puberty with opportunities to develop positive attitudes, values and build life skills such as inter and intrapersonal communication, decision-making, and assertive skills (UNFPA, 2015; UNICEF, 2010).

Review methodology

In order to address the review purpose, the following steps were taken: (1) identify inclusion and exclusion criteria for article selection, (2) identify the relevant work (search strategy), (3) data extraction and quality appraisal of the selected studies, and (3) summary, synthesis and interpretation of the findings (Khan, Kunz, Kleijnen, & Antes, 2003; Ryan, 2010; Siddaway, 2014; Strech & Sofaer, 2012). For the purpose of the review, the target adolescent population was defined as 10–19 year olds.

Inclusion and exclusion criteria

In selecting studies suitable for the review, the following selection inclusion and exclusion criteria were considered. Table 1 illustrates the criteria in detail.

Search strategy

A search for published and unpublished literature on life skills was conducted on four databases. Databases that were included in the search were Science Direct, Wiley, Springer and EBSCOhost. Furthermore, articles were searched on Google Scholar and Google. All available articles up to 2016 were considered. However, filters were used for language (e.g.: English). For the search, key words such as life skills AND prevention AND adolescents or 'life skills in high school AND prevention AND adolescents' or 'coping skills AND prevention AND adolescents' or 'life skills AND behavior AND adolescents' or 'social skills AND behavior AND adolescents' or 'adolescents AND community development' were used. Search details of the databases are reported in Table 2. The search was conducted on 4000 articles on the Science Direct database, which resulted in 191 identifying with key terms. An examination of 120 articles on Wiley resulted in an identification of 6 articles. Among the 1520 articles searched on the Springer database, 89 articles were identified. Out of 1281 articles searched in EBSCOhost, 162 articles

Table 1. Inclusion and exclusion criteria.

Inclusion	Exclusion
Research topic and scope of the research, is it relevant to the research question?	Research topic and scope not relevant to the research question
Concepts and definitions of terms are relevant to research questions.	Concepts and definitions of terms are not relevant to the research questions
Key variables and measures are relevant to research questions	Key variables and measures are not clear and there is no relevance to the research questions
Qualitative studies, quantitative studies, observations, case studies, experimental studies, action research, reports on status of the topic relevant to research questions, conceptual and theoretical frameworks	Articles without any concrete research design, e.g. concept papers, proposals
Studies on adolescents aged 10–19 years	Studies adults, young children, teachers, organizations, business leaders, parents, couples
Articles published till 2016	

Table 2. Applied search details.

Databases searched	Subheadings and key words used	Articles searched	Articles identified
Science Direct	Life skills in high school AND prevention/adolescents Life skills in high school AND prevention Adolescent community development AND programmes Adolescent coping skills AND prevention	4000	191
Wiley	Community development AND behaviour AND adolescents	120	6
Springer	Social Skills AND behaviour AND adolescent Life Skills AND Adolescents AND Prevention Community development AND adolescents	1520	89
EBSCOhost	Life skills AND prevention/AND adolescents Coping Skills AND prevention AND adolescents Life skills AND behavior AND adolescents Social Skills AND behavior AND adolescent Life skills AND prevention/AND adolescents	1281	162
Google Scholars	Life skills Education	300	19
Google	Life skills	300	67

were found satisfactory. Additionally, Google Scholar and Google were also searched in case articles might have been missed from the other databases. Thus, having searched over 600 articles between Google Scholar and Google, 86 articles were identified to be screened.

All studies identified were further examined by a step-by-step screening process. Figure 1 depicts the flow chart of the different stages of the literature search adopted from the PRISMA flow diagram (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). The initial step was evaluating the relevance of the identified articles based on the titles and abstracts. A total of 534 articles were screened for relevance, out of which 183 abstracts were excluded based on the relevance to review objectives. Among the remaining 351 records, 78 records were duplicates and omitted from the review, leaving 273 articles eligible for full text screening. The second step consisted of retrieving the full text articles and screening them for eligibility in the review. Of these, 248 articles were excluded based on the inclusion criteria. Among the excluded articles, most were omitted due to: (a) different sample population, (b) report of pilot test or investigation of life skills needs, (c) implementation of evaluation of a life skills program, (d) establishing relationship between life skills and adolescent issues such as academic achievement, and (e) summary of adolescent intervention programs. Based on the inclusion criteria, 25 articles – one qualitative study and 24 quantitative studies – were selected for the data synthesis.

Data extraction and quality assessment

Having identified the potential articles for the review, the next step was data extraction. According to Popay et al. (2006), the type of data to be extracted should be based on the review questions. If the

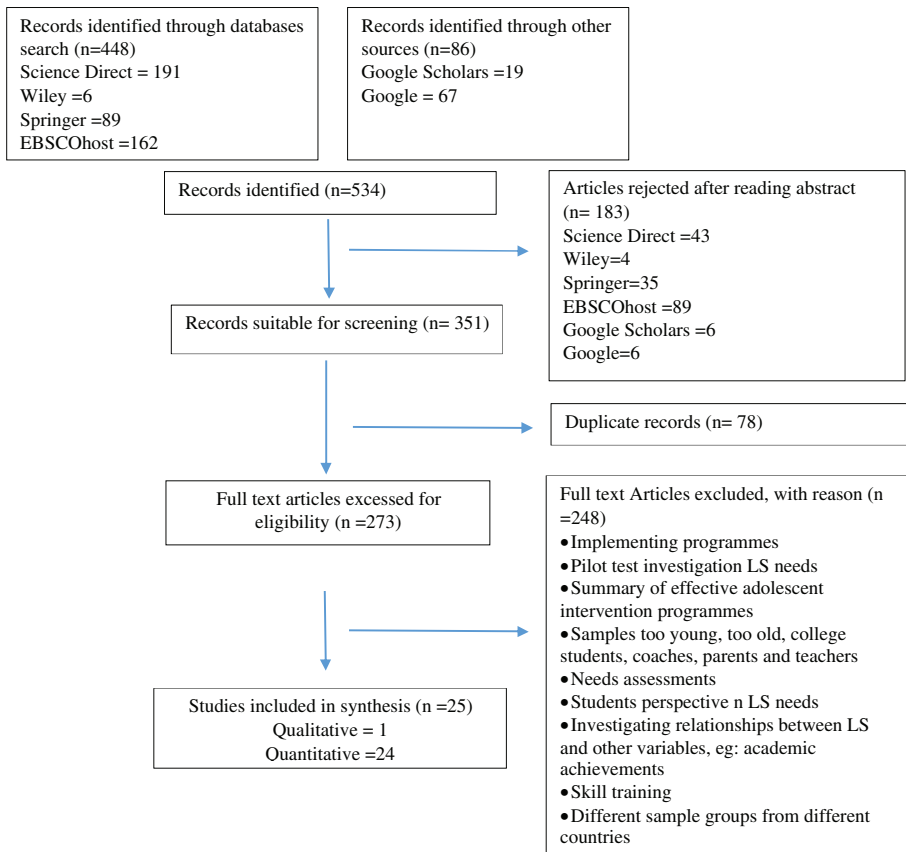


Figure 1. Flow chart of stages of literature search.

review is addressing a question about ‘effectiveness’ of a particular intervention, then relevant information to extract would include the sample population, the study design, where the study took place, the interventions and the outcomes.

Having abstracted data independently for each study, an assessment of the reviewed articles was carried out to determine the methodological quality of each article. To evaluate the quality of the selected studies, a checklist for assessing quality of qualitative studies (Kmet, Lee, & Cook, 2004) and the quality assessment tool for quantitative studies (National Collaborating Centre for Methods & Tools, 2010) were used. The review had to address: selection bias, study design, confounders, blinding, data collection methods, and withdrawals and drop outs. Based on these component ratings seven articles were rated strong, eight articles were found to be of moderate quality and nine articles were found to be weak. Table 3 illustrates the data extraction and study quality of each article.

Results

The reviewed articles suggest that life skills education has been implemented in multiple settings such as sports, at-risk behaviors, and sexual and reproductive health programs (Jones & Lavallee, 2009). The main expected outcome from life skills education is to equip participants with appropriate knowledge and skills to protect them from abuse, exploitation and to help them refrain from risky and risk-taking behaviours (UNICEF, 2015). It is implicit that life skills have several common key components, which include behavioral, cognitive, psychosocial and interpersonal competencies that aid individuals to



Table 3. Selected study details and quality assessment.

Author/country	Definition/theories	Sample size/study design	Outcome measures	Results	Quality rating
Holt et al. (2008)	Life skills: skills that are required to deal with the demands and challenges of everyday life	12 males, mean age = 17.1 years	Field work	Lack of evidence athletes were directly taught about life skills that were reported rather the coach created opportunities for the student to demonstrate initiatives	Strong
Canada	Ecological systems	Data obtained from 10 practices & 10 games	Ethnography		
Botvin et al. (2001)	Addresses major cognitive, attitudinal, psychological, and social factors that are related to tobacco, alcohol, and illicit drug use	3621 (69%) adolescents at the pre-test and post-test (gr.7) and 1 year follow up (gr.8), Mean age = 12.9 yrs	60 h of observation 2 week period interviews between 30 min and 1 h Drug use, polydrug use	Students in experiment group had significant lower level of drug involvement over the 2 year of the study than the control group.	Strong
USA	Cognitive – behavioural approach	Block randomized design, 16 school received intervention, 13 school in control group	Behavioural intentions		
Maryam et al. (2011)	Life skills: abilities that help promote mental wellbeing and capability in young people as they face the realities of life	160 high school male students, Pseudo experimental research	Normative intentions Drug attitudes & knowledge Social and personal competence Breath samples (carbon monoxide) were collected Coppersmith self-esteem questionnaire (58 items)	LS programs could enhance levels of self-esteem in subjects	Moderate
Iran	Social learning theory	Two groups; study group and control group	Demographic checklist	Findings of the study revealed efficiency of the program	
Givaudan et al. (2008)	A team against AIDS: life skills enhancing knowledge about contraception and sexuality and adapts the skills and methodology to HIV prevention	2064 high school students	Self-report questionnaire 174 items about HIV/AIDS, subject norms and attitudes about use of condoms, self-efficacy in condom use, self-knowledge, decision-making, communication, intentions to use condoms and behaviour	Positive effect over a medium time span (1 year follow up period) on knowledge and self-efficacy in condom use results are more effective of the program that is interactive and promotes life skills such as decision-making, self-efficacy and reflection on norms and attitudes	Strong
Mexico	Theory of reasoned action Social learning theory	4 schools, Mean age = 15.97 years 2nd measurement = 1877 3rd measurement = 1696			

(Continued)

Table 3. (Continued).

Author/country	Definition/theories	Sample size/study design	Outcome measures	Results	Quality rating
Goudas et al. (2006)	GOAL: designed to teach adolescents a sense of personal control and confidence about their future for better decisions and better citizens	4th measurement = 1793 Quasi-experimental study With 4 measurement occasions 73, grade 7 students ($M = 35$ & $F = 38$)	Physical fitness tests	Students who received the program demonstrated enhanced knowledge about life skills and higher self-beliefs for personal goal setting	Weak
Greece		2 classes- experimental group 2 control group	Knowledge test	The effects of life skills training were retained one month after the intervention	
Goudas and Giannoudis (2008)	SUPER: sport-based adaptation of the Going for Goal program which used sport metaphors to teach adolescents a sense of personal control and confidence about their future and make better decisions and become better citizens	Pre-post test Following the program the control group was given a post-test, the primary intervention group was given a 1 month follow up 165- 6th & 8th graders (mean age 12.5 & 14.0.5 years)	Self-beliefs Sport-skills tests	Life-skills training resulted in an improvement in sport skills relative to the control group	Weak
Greece		Four schools Experimental and control group 168 young people ($M = 92$, $F = 76$) 10th grade students	Knowledge tests Self-beliefs Attitude Toward Suicide (ATTS), Youth Self Report (YSR) & Life Skills development Scale-Adolescent Form (LSDS-AF)	Among all girls, scores improved in three out of four Life Skills Dimensions whereas boys improved on only one dimension. Boys showed improvement on three dimensions with no improvement among girls.	Moderate
Jegannathan et al. (2014)	Making healthy choices, adopt healthy behavior and reduce high-risk behavior by imparting life skills	6 classes randomly selected from 2 schools one experimental and the other as control school Randomized block design, $M = 12.3$ yrs, 36 schools-3	Social assertiveness	Girls in the preventive intervention demonstrated a slower increase over time in substance use and a faster increase in social assertiveness.	Strong
Cambodia	Promote competency skills and provide knowledge base concerning substance use avoidance Social learning theory	Experimental groups: (a) the school-based LST plus the family-focused SFP: 10-14, (b) LST only, or (c) a minimal contact control group.	Substance initiation		
Lillehoj et al. (2004)					
USA					



Menrath et al. (2012) Germany	Problem behaviour theory Fit and strong for life and lions quest-foster life skills and self-efficacy and include the prevention of substance abuse (cigarettes, alcohol, and drug consumption) as their primary objective	102 classes, 1 561 pupils randomised controlled intervention study with repeated measurements over time	Internalizing Subjective health and well-being, HRQoL, the child's behaviour and general life satisfaction. Question- naires self-reported life skills: social competences & self-efficacy	Significant positive effects regarding the reduction of smoking and improvements in the students life skills in the intervention group. School-based life skills programmes have a positive effect on smoking prevention regardless of socioeconomic status	Strong
Naseri and Babakhani (2014)	Life and social skills training reduces violence, aggression, and destructive behavior in adolescents	60 delinquent adolescent boys, a higher than average (45) score in the AGQ aggression test	AGQ aggression questionnaire	Shows that physical and verbal aggres- sion of adolescent boys significantly reduced because of life skills train- ing, included anger control, problem solving and decision-making, self-cognition, confronting stress, and communication skills	Strong
Iran	Cognitive-behavioral treatments	Pre-test and post-test with two control and experimental groups			
Parvathy and Pillai (2015)	Life skills abilities for adoptive and positive behavior that enables an individual to deal effectively with the demands and challeng- es of everyday life	57 students; boys & girls of 14–18 years, experimental study; pre- post study is conducted with experiment-delayed group	Knowledge level	The study has revealed significant im- pact of life Skills Education training on adolescents.	Weak
India	Social learning theory				
O'Hearn and Gatz (1999)	GOAL program focuses on what adolescents should do rather than on what they should not do	350, 7th graders, Received inter- vention wait-list control group design, aka	Self-awareness Empathy skill Goal setting skills	Results demonstrated gains in knowl- edge of the skills taught as well as attainment of goals set during the program.	Moderate
USA		Randomized cohort			
Smith et al. (2004)	Infusion is an approach that integrates prevention objectives and activities into basic academ- ic objectives and activities at the same time	Nine small, rural school districts ran- domly assigned to 1ST, I-LST, or control conditions in grade seven group-randomized design	Sense of personal control Goal attainment scale Five student surveys	The LST significantly reduced alcohol use, binge drinking, marijuana use, and inhalant use after 1 year for females	Strong
USA			(TI) = pre-intervention	I-LST significantly reduced smoking, binge drinking, and marijuana use for females. At the end of second year I-LST program continued to impact female smoking, but all other results were non-significant. There were no effects on males at either time point	

(Continued)

Table 3. (Continued).

Author/country	Definition/theories	Sample size/study design	Outcome measures	Results	Quality rating
Thompson et al. (2012)	The life skills training sessions focused on a variety of topics that prepared adolescents for independent living upon leaving state custody	Longitudinal data (baseline and 8-month post-test assessments), 351 adolescents (15–18 years) in foster care randomized to a life-skills HIV prevention program	(T2) = end 7th grade (T3) = 8th grade (T4) = 9th grade (T5) = 10th grade Structured interviews	Study findings identified older age, using marijuana, and engaging in vaginal sex without a condom as the most significant predictors of attrition for a longitudinal life skills and HIV prevention program for adolescents in foster care	Moderate
USA			Substance use Mental health problems Child Maltreatment School and peer behaviors HIV Risk behaviors Problem-Oriented Screening Instrument for Teenagers (POST) subscale scores	Trends in the data were seen physical and mental health improved slightly for all subjects, as did their educational and vocational status	Weak
Tuttle et al. (2006)	Cognitive behavioral theory	Students 12 & 16 years. No structured cognitive behavioural life skills training in the Teen club			
USA	Cognitive behavioral theory	Teen club plus PALS Cognitive behavioral skill-building sessions			
Vatankhah et al. (2014)	Life skills (anger control) include the self-recognition and relationship with others and the concept of the relationships	80 students at the Tonekabon Shahed high school, divided randomly into two groups as test and witness group quasi-experimental type	Oxford happiness questionnaire and the year's Cooper-Smith test	Results showed life skills is effective on increasing the self-esteem. Research based on teaching of life skills is effective on increase of happiness and self-esteem will be confirmed	Weak
Iran Vicary et al. (2004) USA	The ADAPT study examines the effectiveness of both the standard LST curriculum and an infused approach to teaching the principles included in LST through the regular subject curricula	Rural Junior High School Females, end of 7th grade, and at the end of 8th grade are randomly assigned to one of three conditions: standard Life Skills Training (LST), infused life skills training (I-LST), or no treatment control,	Measures including substance use, based on Botvin et al.'s measures (1989)	Life Skills Training appeared to have more positive effects for the higher risk females than for those at lower risk after the first two years of the more intense programming. The most improvement continuing through the second year, assertiveness, refusal skills, and attitudes toward drugs.	Moderate



Yadav and Iqbal (2009) India	Life skills are abilities that enable individuals to behave in healthy ways, given the desire to do so and given the scope and opportunity to do so	60 students ($M = 30$ and $F = 30$). 15–17 years.	Self-esteem inventory (school form), Adjustment inventory for school students (AISS), Empathy quotient (EQ) after 5 months of training Coppersmith Self-esteem inventory	Subjects improved significantly in post condition on self-esteem, emotional, educational, total adjustment and empathy. But, no significant difference was found on social adjustment in pre and post condition.	Weak
Chaudhary and Mehta (2008)	A WHO document (1994) defines life skills as “abilities for adoptive and positive behavior that enable an individual to deal effectively with the demands and challenges of everyday life”	94 students between 13 and 15 years, $M = 59$, $F = 35$	Self-administered semi-structured questionnaire, comprising of open-ended as well as close-ended questions.	Improve their self-image as well as boost their confidence level	Weak
India		Pre-test was done in August 2008			
Weichold and Blumenthal (2016)	IPSY is a universal school-based life skills program that aims to delay the onset and to reduce the normative increase in the consumption of alcohol and tobacco in adolescence	$N = 1693$ students	Intervention status	Improve their self-understanding and thereby lay foundation of an integrated sense of identity Results showed that participation in IPSY had a significant effect on the frequency of smoking, and proneness to illicit drug use, across the entire study period	Strong
Germany	Social influence approach	Grade 5, and booster session in grade 6 & 7 Longitudinal quasi-experimental design; intervention and control group, two follow-ups after program completion 6 measurement points	Alcohol consumption Tobacco consumption		
James et al. (2006)	The life skills and HIV/AIDS education programme for facilitation about knowledge about HIV and AIDS, attitude to condom use and people living with AIDS, gender norms, and perceptions about sexual behavior	1141 Grade 9 students	Proneness to illicit drug use Knowledge about HIV infection, attitudes to condom use and people living with HIV and AIDS, perceptions about sexual behavior, communication about safer sex, perceived social support, confidence to assert oneself, and reported intended sexual behavior	Schools where the program was partially, the students' responses on most variables were not significantly different from the responses of students in the control schools. The full program did not influence behavior in terms of condom use in the long term indicating that condom using behavior requires more than just knowledge, positive attitudes, and beliefs about its use	Moderate
South Africa	Theory of planned behavior and Bandura's social cognitive theory	Pre-test multiple post-test experimental-control group design. Measure in 3 time period			

(Continued)

Table 3. (Continued).

Author/country	Definition/theories	Sample size/study design	Outcome measures	Results	Quality rating
Givaudan et al. (2007)	'A Team Against AIDS' was implemented (specifically in the general aspects of skills building and the participatory didactic methodology)	In the 6 months students in intervention group were exposed to the life skills programme focusing on HIV and AIDS prevention After 6-month period a post-test measure by a follow-up measure 4 months later 1566 students	174 items questionnaire	Effects on dependent variables show that the experimental group improved significantly in all variables after the implementation of LS in the three different variable levels (personal, intervention, outcome)	Moderate
Mexico	Theory of planned behavior Bandura's concept of self-efficacy	Mean age = 15.97 Pre-Post-test design	Include self-knowledge Decision-making Self-efficacy condom use Norms about condom use Attitudes toward condoms Knowledge about HIV/AIDS Communication on sexuality		
Kazemi et al. (2014)	Life-skills-training positively effects on problem-solving, effective communication and adjustment to stress in students Cognitive and affective skills	40 students with dyscalculia, Mean age = 11.38	Key – math mathematics test, self-esteem scale and social developmental questionnaire were used	Results indicated that, students who were in experimental group had a significant increase in self-esteem and communication skills, than students of control group	Moderate
Iran		Quasi- experimental with pre-test/post-test and a control group			
Wenzel et al. (2009)	LSPs focus on the training of these generic intra- and interpersonal competencies	952 students, 4 measurement points. (mean age = 10 years at pre-test) experimental design (intervention/control)	Self-reports-alcohol use and school bonding	Multiple regressions indicated that positive influences on school bonding following program participation partially mediated effects on alcohol use	Weak
Germany					
Teyhan et al. (2016)	Life skills safety education centre in Bristol opened in 2000 and is one of seventeen permanent LASER (Learning About Safety by Experimenting Risk) projects in the UK	Sample Subjects were participants in the Avon Longitudinal Study (n = 10,112) children in year 6	Exposure – life skills attendance Road safety Substance perceptions and use. Hospital attendance Potential confounders	Life skills attendance was associated with less reported smoking and cannabis use, but was generally unrelated to perceptions of the health impact of substance use	Weak

cope with challenges, and develop and succeed in various settings. However, several studies report deficiencies in the transfer of skills as little emphasis was placed on acquiring skills through various approaches such as modelling, imitation and reinforcement (Botvin, 1998; Botvin & Kantor, 2000; James, Reddy, Ruiter, McCauley, & van den Borne, 2006; Kazemi, Momeni, & Abolghasemi, 2014; Maryam, Davoud, Zahra, & Somayeh, 2011).

Looking at the outcome measures, it was observed that the selected articles focus on a number of adolescent-related issues such as alcohol, tobacco, drug use, HIV/AIDS, exposure to sex, decision-making, communication, assertiveness, aggression, self-efficacy, self-esteem, self-understanding, self-image, goal attainment and goal setting. The studies revealed that life skills tend to be effective in bringing about individual changes relevant to knowledge, skills and attitudes in risk areas as well as psychosocial skills (Botvin et al., 2001; Lillehoj, Trudeau, Spoth, & Wickrama, 2004; Menrath et al., 2012). Although these studies show promise, they were limited in their scope to a particular research design such as experimental, quasi-experimental or randomized control groups.

Subgroup analysis indicated that life skills education activities conducted around the world reflect the priorities and areas of concern of the respective countries. For example, the USA, Canada, UK, Germany and Greece have many well-planned, tailor-made life skills education programmes that aim to promote positive behaviours around smoking, alcohol, drug abuse, HIV, AIDS, contraception, perception about sexual activities and condom use through refusal skills, attitude change and personal goal setting (Botvin et al., 2001; Goudas, Dermitzaki, Leondari, & Danish, 2006; Goudas & Giannoudis, 2008; Holt, Tink, Mandigo, & Fox, 2008; Lillehoj et al., 2004; Menrath et al., 2012; O'Hearn & Gatz, 1999; Smith et al., 2004; Teyhan et al., 2016; Thompson, Auslander, & Alonzo, 2012; Tuttle et al., 2006; Vicary et al., 2004; Weichold & Blumenthal, 2016; Wenzel et al., 2009). These programs address cognitive, affective, and behavioral competencies to develop self-efficacy, for positive social and personal behavior.

Similarly, life skills education programs are popular in developing countries such as India, South Africa, Cambodia, Iran and Mexico. However, programs conducted in these countries often emphasize the development of communication skills, assertive skills, decision-making, building self-esteem, self-efficacy, reducing learning difficulties, decrease aggressive behavior, anger control, and changing attitudes towards engaging in sexual behavior (James et al., 2006; Jegannathan, Dahlblom, & Kullgren, 2014; Maryam et al., 2011; Naseri & Babakhani, 2014; Parvathy & Pillai, 2015; Pick, Givaudan, Sirkin, & Ortega, 2007; Vatankhah, Daryabari, Ghadami, & KhanjanShoeibi, 2014; Yadav & Iqbal, 2009). Studies are limited to reporting on short term results through experimental methods with small samples sizes without any follow-up to fully ascertain the effectiveness of the respective programs (Jegannathan et al., 2014; Maryam et al., 2011). These findings signal a need for further research to further explore the effectiveness of the programs.

Research gaps and research priorities

Taken together, the identified articles deliver encouraging prospects for improving life skills education programs as several gaps such as how to transfer life skills into everyday life and priorities for reducing risk behaviors were identified (Jegannathan et al., 2014). Qualitative studies on life skills education were limited; only one qualitative study met the inclusion criteria of effectiveness of life skills experiences focusing on young people's learning experiences (Holt et al., 2008). Many of the identified studies were based on assessment of life skills components rather than understanding what knowledge, skills and attitudes adolescents require in order for positive behavior change to occur. Hence, future research should be directed toward investigating how life skills program knowledge is translated into behavior and attitude change (O'Hearn & Gatz, 1999; Parvathy & Pillai, 2015; Pierce, Gould, & Camiré, 2017).

Second, fewer studies have been conducted in developing country contexts in comparison to those carried out in developed countries (Givaudan, Van de Vijver, Poortinga, Leenen, & Pick, 2007; Maryam et al., 2011). Successful life skills programs such as the Botvin Life Skills Training Programme have implemented cognitive, affective and behavioral platforms for intervention with the goal of influencing individual learning with ongoing support from the community (Botvin & Griffin, 2004). These programs

were highly structured with concise modules specifically prepared for addressing at-risk behaviors. In contrast, programs conducted in countries like India and Iran, such as the Life Skills Education Program, comprised a series of developmental sessions consisting of communication skills, assertiveness, anger management, decision-making, creative and critical thinking skills (Naseri & Babakhani, 2014; Parvathy & Pillai, 2015; Yadav & Iqbal, 2009). Many of these programs however, lacked rigorous planning, and were thus not implemented effectively (Holt et al., 2008; James et al., 2006; Jegannathan et al., 2014). For instance, researchers have suggested that life skills programs aimed at improving attitudes and knowledge on HIV/AIDS and condom use need to improve the time spent on the lessons, in addition to increasing the number of lessons carried out to address specific issues (James et al., 2006; Thompson et al., 2012). Furthermore, some content needs to be taught with more skill-based activities to ensure that skills are developed (James et al., 2006; Maryam et al., 2011; Thompson et al., 2012).

A variety of teaching methods need to be used to ensure participant involvement and internalization of information. These contents in the life skills education programs need to be delivered with an emphasis on development of skills rather than delivering specific knowledge about safe sex and protection against HIV/AIDS alone. For example, James et al. (2006) stated that if the goal of life skills is to promote safer sex, then efficacy beliefs and skills related to condom use as well as proper communication skills on how to communicate with one's partner on adopting safer sex should be included.

Studies reported that many life skills programs in developing countries focusing on promoting adaptive behaviors are structured as one-shot or short-term interventions rather than ongoing activities, and they lack emphasis on individual learning (Parvathy & Pillai, 2015; Teyhan et al., 2016; Tuttle et al., 2006). Scholars, however, have emphasized the need to implement sustainable life skills programs as a top priority (James et al., 2006; Jegannathan et al., 2014). Therefore, more attention is required in these contexts to develop programs that are ongoing and sustainable through systematic planning, implementation, monitoring and evaluation in order to learn skills and attitude change (UNICEF, 2012).

While there is consensus that life skills education acts as a buffer for prevention of at-risk behaviors, the sustainability of effective life skills programs has been called into question (James et al., 2006; Lillehoj et al., 2004; Yadav & Iqbal, 2009). According to James et al. (2006) this could be due to a lack of programmatic structure, which tends to be common in developing country settings. Kazemi et al. (2014), Maryam et al. (2011), and Teyhan et al. (2016), suggest that program evaluation and follow up are equally important in sustainability. Therefore, systematic planning and implementation is critical for effective and sustainable programming (Holt et al., 2008). Gatekeepers, policy makers, administrators and teachers of life skills need to believe in the potential and value of the life skills programs and receive appropriate training (James et al., 2006; Jegannathan et al., 2014). Further, long term monitoring and evaluation reviews are required to gather empirical evidence on the effectiveness of programs (Tuttle et al., 2006). This includes participant feedback and discussion on each life skills topic in order to improve application of the skills taught (WHO, 2001).

Given the role of life skills as a strong catalyst for the development of positive behaviour, building life skills in the early years of life will help children navigate their social and emotional challenges such as coping with emotional pain, conflict, peer pressure and relationship issues. How life skill programs are structured and delivered can significantly impact long-term program quality, therefore, it is important to deliver programs systematically in order to have a lasting impact on the health and wellbeing of participants (Holt et al., 2008).

Conclusion and future directions

This review examined published literature on the effectiveness of life skills education programs for adolescents in developed and developing countries. Findings reveal great promise for life skills education as a way to promote positive behaviour and to act as a buffer against risk-taking behaviors for adolescents in both developed and developing countries. The review revealed a number of quantitative studies examining life skills as an intervention program to effectively deal with adolescent issues such as self-esteem, decision-making, problem solving (Parvathy & Pillai, 2015), coping with stress, drug

abuse, alcohol abuse, violence, HIV and AIDS (Botvin et al., 2001; Thompson et al., 2012) in controlled environments. Qualitative studies on life skills education were limited. Minimal research attention has been directed towards adolescents' transfer of life skills knowledge into their daily lives.

There is a need to understand adolescents' learning experiences within life skills education and to identify which skills are most effective at times of difficulty. Hence, inquiry into how adolescents acquire knowledge and skills through life skills programs and subsequently adopt positive attitudes and behaviours as a result is not well documented. This should be considered as an essential research priority. More work is needed to ensure proper transfer of life skills to attain long term results.

Understanding how knowledge, skills and values learnt from life skills education facilitates healthy transition to adulthood will add merit to life skills education programs in diverse contexts. Examining adolescent experiences within the embedded culture of the individual is important to understand how individuals from different backgrounds construct life skill knowledge into reality. Therefore, more studies are needed that embed life skills education within specific social and cultural settings. Studies can be framed within the view of experiences, such as narratives from adolescents' lives, analysis of multiple perspectives and specific social contexts that shape their life skills experiences. Such approaches can provide a more nuanced perspective on the reality of program effectiveness.

Disclosure statement

No potential conflict of interest was reported by the authors.

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