

The World Starts With Me: using intervention mapping for the systematic adaptation and transfer of school-based sexuality education from Uganda to Indonesia

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Abstract

Evidence-based health promotion programmes, including HIV/AIDS prevention and sexuality education programmes, are often transferred to other cultures, priority groups and implementation settings. Challenges in this process include the identification of retaining core elements that relate to the programme's effectiveness while making changes that enhances acceptance in the new context and for the new priority group. This paper describes the use of a systematic approach to programme adaptation using a case study as an example. Intervention Mapping, a protocol for the development of evidence-based behaviour change interventions, was used to adapt the comprehensive school-based sexuality education programme 'The World Starts With Me'. The programme was developed for a priority population in Uganda and adapted to a programme for Indonesian secondary school students. The approach helped to systematically address the complexity and challenges of programme adaptation and to find a balance between preservation of essential programme elements (i.e. logic models) that may be crucial to the programme's effectiveness, including key objectives and theoretical behaviour change methods, and the adaptation of the programme to be acceptable to the new priority group and the programme implementers.

Keywords

Intervention mapping, Systematic adaptation, Fidelity, Logic model, Indonesia

The transfer of health promotion programmes to other cultures, implementation settings and for other priority groups is common practice in HIV/AIDS prevention and sexuality education. Transfer is usually more cost-effective than developing a new intervention, and those interested in using the programme can save time and other resources by avoiding mistakes through lessons learned in the original programme.

Although a systematic approach is found in the adaptation of existing sexuality education interventions [1, 2], too often, interventions are transferred without considering the extent to which the pro-

Implications

Practice: An evidence-informed comprehensive sexuality education programme for adolescents is available which can be systematically adapted to other countries and contexts.

Policy: Resources should be directed towards systematic adaptation of existing evidence-based health promotion programmes, to facilitate research and in-depth analysis of needs of and acceptability by relevant stakeholders.

Research: Empirical studies have to be conducted on the essential elements of effective health promotion programmes and how to successfully transfer these to the adopting context.

gramme fits with the new priority group, context and implementation setting. Four ways of adaptation are identified by Backer [3]: adding or deleting programme components, changing programme components or content, changing the process or intensity of implementation and making cultural modifications.

Planners can adapt interventions systematically or non-systematically. The disadvantage of a non-systematic approach to intervention adaptation is that adaptations are not documented, depend largely on individual decisions rather than formative research and planners do not gain insight into why particular programme elements are removed, added or maintained in the programme. A risk of non-systematic adaptation is that the programme may not address the needs of the new priority group or fit with the new implementation setting. In addition, essential programme elements may be removed from the original programme, decreasing the programme's effectiveness [2, 4].

To avoid these pitfalls of programme adaptation, planners should use a systematic approach when adapting existing programmes to a new context. This helps them to produce a programme that fits with the health needs and behaviour change focus

of the priority group, is implementable in the new context, fits with governmental and organisational policies, matches the capacities of programme deliverers and is culturally acceptable. Systematic adaptation is very important for preserving programme elements that are deemed necessary to change behaviours in the original programme and increases the chance of diffusion and sustainable implementation in the new setting [5–9].

This paper describes the importance of systematic intervention adaptation and how it can contribute to preserving crucial programme elements and promote the adoption, implementation and sustainability of existing health promotion interventions in new situational contexts. This is illustrated with the case of the systematic adaptation of the comprehensive school-based sexuality education programme ‘The World Starts With Me’ (WSWM), which was developed for a priority population in Uganda and adapted to a programme for young people in secondary schools in Indonesia, titled DAKU. Intervention Mapping [10], a protocol for the systematic development of evidence-based behaviour change programmes, is used to describe the different adaptation steps and the main outcomes of these steps.

THE WORLD STARTS WITH ME PROGRAMME

The WSWM programme is a comprehensive sexuality education programme addressing the sexual and reproductive health needs and rights of secondary school students in Uganda. The programme was originally developed in 2002 by SchoolNet Uganda in collaboration with two Dutch organisations, Rutgers WPF and Butterfly Works. The programme is one of the 18 curricula underlying UNESCO’s technical guidance on sexuality education [11] and was developed using the experiences of the planned development and implementation of the Dutch programme “Long Live Love” [12], characteristics of effective sexuality education [13, 14] and materials of existing sexuality education programmes of Rutgers WPF Vietnam, United Nations Children’s Fund (UNICEF) Namibia and Straight Talk Uganda.

WSWM is a computer-based programme complemented with teacher-led activities. A meta-analysis [15] shows that computer technology-based programmes have similar efficacy to more traditional human-delivered interventions with regard to increased condom use and reducing sexual activity, numbers of sex partners and incident sexually transmitted infections (STIs). Given their low cost to deliver, ability to customize intervention content, flexible dissemination channels and attractiveness to young people, computer technology-based interventions represent a promising strategy to deliver HIV/AIDS risk reduction programmes. In addition, computer assignments make interventions such as WSWM a student-driven programme, unburdening

teachers from initiating discussions about sensitive issues such as sexuality.

The WSWM programme is based on the following principles: openness and acceptance of young people’s sexuality, not on taboos; a positive, non-judgmental approach towards sexuality, not on fear or control; equity in gender and sexual orientation; the right of young people to complete and accurate information, to self-determination and protection; and active participation of young people in all stages of programme planning and implementation. The developers seek to empower young people to make their own responsible choices and perceive young people as the actors and social agents of change instead of mere recipients of messages or programmes.

The comprehensive programme consists of an introductory computer skills lesson and 14 lessons on adolescent development, decision making and sexual and reproductive health and rights (SRHR). Each lesson includes practical applications to increase knowledge, develop attitudes, help youth recognise and cope with social influence and to learn skills, all of which have been shown to be characteristics of effective sexuality education programmes [16, 17].

The programme starts with lessons on adolescent development and decision making including personality, norms and values, and emotional and physical development. After that, the programme continues with lessons related to social influences on personal decision making and behaviour, relationships with parents, friends and peers, gender and rights. Next, the programme addresses sexuality and love as positive and enjoyable parts of life and becoming sexually active as an important decision for which young people and their partners have to be mentally and physically ready. Further lessons address the possible negative consequences of being sexually active and ways to prevent and cope with pregnancy, HIV/AIDS, STIs, stigma and sexual abuse. The final lessons help students reflect on what they learned, how the learning could help them to plan a healthy future and how to disseminate what they learned among their peers and among a broader audience in and outside the school.

WSWM was adapted in 2005 to the Indonesian context and priority group of secondary school students and resulted in a sexuality education programme for secondary school students in Indonesia. The Indonesian programme is titled DAKU, from the Bahasa statement: ‘Dunia remajaku seru’, meaning ‘My youth time is exciting’. A planning group consisting of representatives of Indonesian students and teachers and two organisations in Indonesia promoting SRHR, Rutgers WPF Indonesia and Yayasan Pelita Ilmu, conducted the adaptation of the programme from the Ugandan to the Indonesian context. The planning group collaborated closely with an Advisory Board comprising the Ministry of Education (Physical Health Centre), Fatayat

NU (a Muslim women's association), Universitas Indonesia (Centre for Health Research, Faculty of Public Health), the Indonesian Planned Parenthood Association, UNESCO, UNICEF, PLAN Indonesia, the provincial AIDS commission and school principals. In the period 2005–2010, the adapted WSWM programme DAKU has been implemented in 94 secondary schools in four provinces in Indonesia.

The adaptation was conducted following an Intervention Mapping toolkit on planning sexuality education programmes, developed by Rutgers WPF, specifying steps that describe how to practically adapt and implement WSWM for a specific culture and context [18, 19].

INTERVENTION MAPPING

The health promotion literature provides several frameworks to guide adaptation of programmes to a new setting and priority population [3, 6, 7, 20, 21]. Most of these list the tasks involved, such as (1) assessment of the new priority population and implementation context, (2) decision whether to adopt a programme with or without adaptation, (3) preparation by adapting (when necessary) and pre-testing intervention materials, (4) development of an implementation plan and pilot testing of the adapted intervention and (5) implementation and evaluation of the intervention [21].

With regard to programme adaptation, these frameworks explicitly or implicitly address finding a balance between (1) fidelity to the original programme and (2) modifying the programme to fit the new cultural, organisational, and policy context [4, 22]. Fidelity to the original programme means that core elements, protocols, procedures and content are kept in the new programme and the programme is implemented in the new setting as it was in the original programme evaluation. Core elements are the aspects of the programme that embody the theory and internal logic of the intervention and most likely produce the intervention's main effects: behaviour change among the priority population and/or relevant environmental actors and successful adoption and implementation [3, 4, 23].

Fidelity to the original programme can conflict with the implementation context in the new setting. For example, teaching condom-use skills as protective behaviour for young people may be appropriate in the original setting but may not be acceptable according to educational policies in the new context. Leaving out condom-use skills may harm the programme's fidelity and effectiveness, but preserving it may lead to non-adoption and non-implementation of the programme by schools and teachers.

Intervention Mapping (IM) provides a systematic approach that adds detailed "how-to's" to the tasks in the frameworks mentioned above [24]. IM is a planning framework for the development of theory-

and evidence-based behaviour change programmes. However, in practice, most programmes are not developed from scratch but are an adaptation of existing programmes. In programme adaptation, IM provides a series of iterative processes for finding the balance between fidelity to the original programme and modification for the new context. IM guides planners through (1) needs assessment, (2) adaptation of objectives, (3) adaptation of methods and practical applications, (4) revision of programme materials, (5) planning or revising an implementation protocol and (6) planning evaluation.

IM is characterised by four perspectives that are applied during the planning process in all steps [10]. These perspectives are equally relevant for programme development and programme adaptation. At first, relevant stakeholders including the priority population and programme implementers should be involved in all aspects of decision making of adaptation. A *linkage system*, linking relevant stakeholders, organises the collaboration between the future programme users from the start of the adaptation process and involves relevant decision makers who can influence diffusion and sustainable implementation [25]. Secondly, programme planners use multiple theories and supporting evidence to explain the problem of interest and to give guidance for change. Thirdly, an intervention is seen as an event occurring in a system. Other factors within the system can influence the targeted behaviour or environmental change. The fourth perspective is that IM approaches problems and their solutions from an ecological perspective of behaviour (change) of various actors [26]: not only individuals who are at risk but taking into account social influence on interpersonal (e.g. peers, parents), community (e.g. school, health services), societal (e.g. cultural norms) and global levels (e.g. regional and international contexts). Environmental conditions influence individuals and other environmental conditions, while individuals may also influence higher-level environments.

INTERVENTION MAPPING STEPS IN ADAPTATION

We describe each IM step specifically for adaptation. This is illustrated with the case of the adaptation of WSWM from Uganda to Indonesia. Table 1 provides an overview of the IM tasks for each step of adaptation and presents the key aspects of change following the adaptation of WSWM to the Indonesian context.

Step 1. Needs assessment/situation analysis

To be able to decide whether or not to transfer an existing programme to a new setting, the adaptation process starts with a needs assessment and situation analysis (NA/SA) in the new context [5, 24]. The planners assess the needs of people at risk for health problems and conduct an analysis of the possibilities

Table 1 | Intervention mapping steps in adaptation

Step	Tasks	Adaptation to Indonesia
1. Needs assessment/situation analysis	<p>1.1 Describe the <i>logic model of the problem</i> in the new setting, including the priority population</p> <p>1.2 Compare the <i>logic model of the problems</i> in the new and original settings, including the priority populations, by looking at the needs assessments in both settings</p> <p>1.3 Describe how the two logic models match and how the priority populations differ with regard to demographics, context and the burden of, and factors related to, the health problem</p>	<ul style="list-style-type: none"> ▪ HIV and teenage pregnancy prevalence rates are higher in Uganda than in Indonesia ▪ Ugandan youth generally engage in sexual behaviour at a younger age than Indonesian youth ▪ Transactional and trans-generational sex is more common in Uganda than in Indonesia ▪ Drug use prevalence is higher in Indonesia than in Uganda ▪ Stress management is more important in Indonesia than in Uganda ▪ Age of priority groups is different in the two countries: in Indonesia older than 15 years, in Uganda 12–19 years ▪ The participatory and outcome-based approach of WSWM matches well with the Indonesian educational policy of competency-based learning
2. Performance objectives and change objectives	<p>2.1 Prepare or obtain a logic model of change for the original programme, including the behavioural and environmental outcomes, performance objectives, determinants and matrices of change objectives</p> <p>2.2 Add or delete objectives and/or determinants, based on the logic model of the problem for the new setting, including behaviour and environmental changes, and its determinants</p> <p>2.3 Prepare a logic model of change for the new setting</p>	<ul style="list-style-type: none"> ▪ Most objectives remained the same in the Indonesian matrices ▪ The performance objective ‘Handle emotions and stress’ was adapted (stress was added), which is a performance objective of the health-promoting behaviour ‘Act in a balanced way during adolescence while developing toward adulthood’ ▪ Two performance objectives were removed from the list of Ugandan objectives: ‘Decide not to engage in sexual relationships with partners in an older generation’ and ‘Refuse to have sex in exchange for gifts’ ▪ ‘Abstain from alcohol and drugs’ was added as a health-promoting behaviour in Indonesia
3. Theoretical methods and practical applications	<p>3.1 Review the original programme to analyse (theory-based) methods and practical applications</p> <p>3.2 Make sure that there are appropriate and sufficient methods for all change objectives in the original programme</p> <p>3.3 Add methods where needed—either because they were inadequate in the original programme or because new change objectives were added in the last step and new methods are needed to influence change</p> <p>3.4 Make sure that all methods are adequately addressed with practical applications</p> <p>3.5 Make sure that all possibly essential elements in the original programme are retained, and that methods or practical applications are removed because of deleted change objectives</p>	<ul style="list-style-type: none"> ▪ Theoretical methods remained the same in the Indonesian programme ▪ The practical application ‘condom demonstration’ was not adopted in its original form from the Ugandan programme, but replaced by referral to an out of school organization that provides condom demonstrations ▪ New practical applications for the new change objectives are added; for example, the lesson on drug use includes a new presentation with information about drug use as well as role play assignments to learn to refuse drugs that are offered by others
4. Programme production	<p>4.1 Review the original programme scope and sequence, materials and delivery channels and assess whether these match with the selected theoretical methods</p>	<ul style="list-style-type: none"> ▪ Content and appearance of the practical applications were adapted to Indonesian examples, names, colours, drawings and stories in role plays

Table 1 | (continued)

	<p>4.2 Pre-test original materials with local priority population to assess whether they meet local preferences and garner attention of the new priority population</p> <p>4.3 Plan and produce specific changes to scope, sequence, materials and delivery</p> <p>4.4 Pre-test materials with modifications</p>	<ul style="list-style-type: none"> ▪ All characters, games and other visuals were adapted to modern, attractive, Indonesian versions ▪ The Indonesian programme is more interactive than the Ugandan version, including animation and audio ▪ The pre-test of the programme resulted in some minor changes, for example, shortening the number of slides in digital presentations
5. Planning adoption and implementation	<p>5.1 Develop performance objectives for adoption, implementation and sustainability for the new programme</p> <p>5.2 Use information about programme delivery in the original setting to improve the implementation protocol in the new setting (completeness, fidelity, dose, provided support such as training, promotion, technical assistance or capacity building)</p> <p>5.3 Compare the performance objectives to the implementation protocol for the original programme with the new programme</p> <p>5.4 Develop a revised implementation protocol if needed, looking at completeness and feasibility of the original protocol</p>	<ul style="list-style-type: none"> ▪ Performance objectives, theoretical methods and practical applications for teachers (and teacher training) remained to a large extent the same, but participatory education skills and a separate training on this were added to the training in Indonesia ▪ New performance objectives such as 'Creating commitment in the own organizations' and 'Showing their commitment for the programme to school principals and teachers' and theoretical methods and practical applications for reaching the objectives were added for the Ministry of Education
6. Planning for evaluation	<p>6.1 Plan and implement an efficacy or effectiveness evaluation of the adapted programme, using conclusions of and compare with the original programme effectiveness evaluation</p> <p>6.2 Plan and implement a process evaluation of the new programme, assessing reach and dose, acceptability of the programme in the new setting, and compare results with the original programme</p>	<ul style="list-style-type: none"> ▪ The measures in the effectiveness evaluation in Uganda were used in an effectiveness evaluation in Indonesia ▪ Anonymity in completion of the effectiveness evaluation questionnaire in Indonesia was a prerequisite for authorities to be able to include questions measuring sexual behaviours ▪ Despite more in-depth training for Indonesian teachers than in Uganda, the process evaluation in Indonesia showed that the support and training for teachers do not meet their needs to be able to deal with conflicting norms related to sexuality in society and school context

to address these problems with the evidence-based programme under consideration for adoption. Planners compare the findings in the new setting with the assessment in the original setting. See Table 1 for an overview of tasks.

The assessment leads to a *logic model of the problem*, which consists of an analysis of the causes of health problems (e.g. the sexual and reproductive health status of young people). The logic model provides an overview of risk behaviours and their determinants within the at-risk group(s). It also depicts the environmental factors and their determinants that impact directly or indirectly on the risk behaviours (PRECEDE, [27]. Planners compare the priority populations of both the original and new settings, by looking at demographics, context and the burden of, and factors related to, the health problem. Finally, planners assess the implementation setting including

policies (e.g. educational policies), the existing resources and structures for implementation (e.g. school system) and other existing health promotion programmes (e.g. sexuality education programmes).

Planners need this information to be able to decide whether the programme under consideration for adaptation matches sufficiently with the needs in the new context. In case of any gaps or discrepancies, the NA/SA provides evidence for systematic adaptation of the objectives (either addition or deletion) from the original programme.

For example, in Indonesia, the young people in the planning group used the NA/SA findings to convince the adult teachers, Ministry of Education and other decision makers that young people in Indonesia have unprotected sexual intercourse and that many of them do not receive comprehensive sexuality education, thus making the new sexuality

education programme a necessary intervention. The NA/SA also showed that the participatory and outcome-based approach of WSWM matches well with the Indonesian educational policy of competency-based learning, initiated in 2004. Both elements contributed to the support of the Ministry of Education for the new programme and the commitment and support of the teachers and decision makers for implementing the programme.

The comparison between the NA/SA findings in Indonesia and the logic model of the problem of the Ugandan WSWM programme resulted in the decision of the Indonesian planning group that there was a close enough match to continue with the adaptation. Even though there are important differences between young people in Uganda and Indonesia, most objectives of the sexuality education programme were relevant for both groups. For example, HIV and teenage pregnancy prevalence rates are much higher in Uganda than in Indonesia, and Ugandan youth generally engage in sexual behaviour at a younger age than Indonesian youth. However, this information did not affect the content and logic model of the new programme, as young people in both settings need education to learn to make well-informed decisions about their sexual development and behaviour.

The comparison between the logic models of the problems in the two countries showed that it was necessary to implement the new programme among an older priority group in Indonesia (older than 15 years), whereas in Uganda, the priority group was aged 12–19 years. It was also decided to add objectives to the original programme with regard to some differences in the two contexts. Because of high drug use prevalence in Indonesia, the planning group decided to add drug use as an important risk behaviour for HIV infection. Also, because of findings regarding stress in schools in Indonesia, stress management was added to the Indonesian DAKU! programme. Planners decided that transactional and trans-generational sex should be less emphasised, as these are important risk behaviours of Ugandan young people, but of lower prevalence in Indonesia.

Step 2. Performance objectives and change objectives

After the decision that the original programme fits well enough with the NA/SA findings in the adopting setting, the planning group assesses the fit between the *logic model of change* in the original programme and the proposed logic model of change for the new site (see Table 1 for an overview of tasks).

The logic model of change includes a description of: (1) the targeted *health-promoting behaviours* of the at-risk population (for example, sexually active young people use condoms correctly and consistently) and of relevant ‘actors’ in the environment (for example, health care providers provide condoms to young people), (2) the *performance objectives* (or sub-behaviours) of each health-promoting behav-

our—for example, correct and consistent condom use includes the following performance objectives: negotiating condom use with a sexual partner, obtaining condoms, taking condoms along, correct use of condoms, maintained condom use and (3) the targeted *change objectives* (describing change in behavioural and environmental determinants)—for example, desired change in beliefs, attitudes, perceived social norms, self-efficacy and skills that are needed to accomplish the performance objectives, such as negotiation of condom use or obtaining condoms for sexually active young people.

Health-promoting behaviours, performance objectives and change objectives are then compared with the objectives of the original programme. The comparison between the two models of change is further shaped by discussions between programme planners, priority groups, implementers and decision makers to assess to what extent the objectives are realistic and can be achieved in the new context. The result of step 2 is a systematic description of change objectives that should be added to or removed from the original programme, next to those objectives that should be maintained.

Some findings in the Indonesian NA/SA suggested that elements in the Ugandan programme conflicted with the social norms, religious beliefs and the Indonesian law and were negotiated with the planning group and Advisory Board. For example, NA/SA evidence showed that many young people in Indonesia are sexually active and few use condoms during sexual intercourse. However, some members of the planning group strongly insisted on limiting the health-promoting behaviours to abstinence from sex and postponement of sexual intercourse until marriage. After careful considerations (for example, that the programme should address the needs of both sexually active and non-active young people) and discussions during official and informal meetings, the planning group made a final decision to acknowledge the reality of premarital sexual activities among Indonesian youth and to add the message to one of the lessons that sexual intercourse preferably takes place within a marriage relationship (see Table 1).

Step 2 resulted in objectives that match with the needs of Indonesian young people and received support and commitment from all relevant stakeholders including decision makers such as the Ministry of Education.

Step 3. Theoretical behaviour change methods and practical applications

In step 3, planners analyse the intervention for its theoretical methods (general techniques or processes for influencing changes in behavioural determinants) and practical applications (materials and activities) and make sure that essential behaviour change methods in the original programme are retained in the adapted programme in order to produce the desired effects in the change objectives (see Table 1).

Systematic review of methods and applications in the original programme is required to define which theoretical methods of a given intervention are essential to success and which might be changed in order for the intervention to be of value elsewhere or with other populations [9, 28]. For example, if a programme uses role modelling (a theoretical method from Bandura's Social Cognitive Theory; [29]), the practical application of whether the role models are persons with whom the priority population can identify would be an important aspect of an effective translation of the behaviour change method to the new context. Equally important are the parameters of the practical application to be effective. For example, one of the parameters of successful identification of the priority population with role models is the credibility of the source, method and channel, which may differ for each different social or cultural context.

Planners should also assess whether circumstances in the new implementation setting allow the original practical applications or not. For the WSWM programme, some of the applications are teacher-led, but the majority is computer-based, making computer availability and accessibility in Indonesian schools a prerequisite.

The Indonesian planning group analysed the original theoretical methods and practical applications to identify whether they would fit with the Indonesian youth and in the Indonesian school setting. The participatory methods of WSWM (including modelling and skills training) fit well in the in 2004 initiated *competency-based educational policy* of the Indonesian Ministry of Education. However, not all practical applications could be retained. For example, the practical application 'condom demonstration' was not adopted in its original form from the Ugandan programme because the Advisory Board expected too much resistance from teachers and schools and wanted to avoid running the risk that DAKU would not be adopted at all. To be able to support students who need these skills, the DAKU planning group replaced the condom demonstration in the student section with referral to an out-of-school organization that provides education and contraceptives, including condoms, to young people. The planning group selected new practical applications for the new change objectives. For instance, there was a new digital presentation on stress management, including learning to recognise different perspectives in case of problems. The lesson on drug use also included a presentation to provide information, as well as role play assignments to learn to refuse drugs that are offered by others.

Step 4. Programme production

The focus in step 4 is on the adaptation of the programme's presentation, to make one coherent programme and pre-test the materials and activities with the priority population and programme deliverers (see Table 1). The acceptability, attractiveness

and persuasiveness for the new priority group and implementers are considered. Most of the adaptation changes recommended in this step address the match between the programme presentation and the characteristics of the new population and implementers. Elements of modification of the programme include, amongst others, the translation from one language to another—the most obvious form of programme adaptation. But modification moves beyond surface structure, such as changing the ethnicity or the appearance of role models, to deep structure, by addressing the core values, beliefs, norms and other more significant aspects of the cultural group's world views and lifestyles [30]. These aspects are thoroughly explored in steps 1 through 3 above and are well illustrated in the modification of objectives and practical applications in the adaptation process in Indonesia.

Adaptations in the programme's presentation, content and delivery require cultural sensitivity among programme planners, among those adapting the programme and among programme delivery staff [31]. Planners have to consider age, gender, literacy, ethnicity and urban/rural residence. To garner attention of the participants, the programme has to be attractive, seem credible and trustworthy, foster identification and make use of preferred delivery channels. If planners decide to change the programme's presentation, this should be based on formative research that pre-tests the original programme and ascertains new host site preferences for modification [32]. Once adaptations are made, they must also be pretested. After that, planners can pilot test the new intervention as a whole.

In the adaptation to Indonesia, the biggest changes are seen in this step. The content and appearance of the applications were adapted to Indonesian examples, names, colours, drawings and stories in role plays. For the new practical applications, new content was developed based on the relevant change objectives, methods and practical applications identified in steps 2 and 3. All characters, games and other visuals were adapted to modern, attractive, Indonesian versions. A challenge faced in translating from English was that the Bahasa language does not have some of the words for sensitive and taboo sexuality-related topics. For sexual activities, such as petting and fondling, local words were found that were familiar to the young people. When the planning group could not find the local word and to describe sexual organs, they used the English terminology.

The most essential change in the DAKU programme was the inclusion of the message that sexual activity preferably takes place within marriage, whereas other sections and messages related to sensitive topics, including masturbation, oral and anal sex and sexual orientation, were unchanged. The planning group, including students and teachers, together with the Advisory Board decided about the final layout of the programme. As a result, the Indonesian programme is more interactive than the Ugandan version, including

animation and audio for the digital peer educators. The pre-test of the programme resulted in some minor changes: making the definition of gender more practical and understandable for young people than in the original programme and shortening the number of slides in some of the digital presentations.

Step 5. Planning adoption and implementation

Promoting full adoption and implementation of health promotion programmes is difficult and full programme use is unusual. For example, a study evaluating the adoption and implementation of a Dutch HIV/AIDS prevention programme found that around 70% of possible programme implementers became aware of a relevant programme, 50% adopted the programme with the intention to use it, while only 30% actually implemented the programme, and 10% eventually continued to use the programme to the point of institutionalizing it [33]. Planning the adoption and implementation of any, including adapted, intervention is an important and often neglected step of programme planning. Systematic planning of adoption and implementation can be done by completing a number of tasks (see Table 1). Planners start with conducting an assessment of who will adopt and implement the programme, what exactly they will need to do and what will determine the adoption and implementation behaviour. Once objectives are defined, theoretical methods and practical applications can be selected, and interventions can be designed to promote programme use (for example, a teacher training, that meets the needs of teachers). The behavioural determinants of people or organisations who are the intended adopters and implementers of the new programme should be analysed. Planners assess whether the willingness to adopt the new programme is equal to the willingness in the original context, whether similar methods and applications for promoting the adoption and implementation of the adapted intervention are applicable in the new setting and whether the original training and support for implementers are sufficient for the new setting. They describe how programme implementation should be changed to obtain fidelity across adoption, implementation and maintenance. As in step 4, modifications to the original implementation protocol should be pretested and pilot tested in the new site.

Organizational capacity and readiness for implementation are important conditions for this step [1, 6, 34]. Because most implementers are professionals working in organisations, planning for implementation is in itself an intervention at the organisational level. Programmes adapted with the agency's support have been found to have an increased chance to be institutionalized [5, 35–37].

The adoption and implementation objectives for school administrators and teachers in Uganda were adopted in the Indonesian context. The theoretical methods and practical applications also remained to a large extent the same. For example, the objectives

of and practical applications in teacher training and support are very similar in both countries. The original, Ugandan, teacher training included sessions on SRHR of young people, communication about sexuality, exercising the new programme and exercising facilitation skills. As a result of discussions and interviews with teachers, who indicated the need for participatory education skills, an additional, separate training on facilitation skills was added to the Indonesian teacher training.

New performance objectives were added for the Ministry of Education, as the Indonesian planning group involved them more intensively than had happened in Uganda. New applications and theoretical methods were selected to influence Ministry of Education staff.

Step 6. Planning for evaluation

After adaptation, planners need to develop a plan for process and effectiveness evaluation of the adapted programme, to be able to determine whether the intervention remains effective in the new setting with the programme changes that have been made (see Table 1 for an overview of tasks). The objectives of the adapted programme are the indicators of the evaluation and may therefore differ from the indicators of the original programme. Planners evaluate both the objectives of the priority population (step 2) and the adoption and implementation objectives identified in step 5.

An effectiveness evaluation was conducted in Indonesia with a similar, quasi-experimental, design and questionnaire as was used in Uganda. The questionnaire includes questions related to reported sexual behaviour of the respondents. Initially, there was resistance against including these questions in the questionnaire. By making sure the respondents could complete the questionnaire anonymously, it was possible to include them.

The questionnaire was designed after the performance and change objectives of step 2 and includes measures on beliefs, attitudes, perceived social norms, self-efficacy and intention of abstinence/delayed onset of sexual intercourse, correct and consistent condom use and consensual sex, which showed some positive effects in the Ugandan effectiveness evaluation [Rijsdijk et al., manuscript under review].

The process evaluation in Indonesia measured programme reach, programme acceptance by the priority population and implementers in the new setting and measured completeness and fidelity of programme delivery. Specific attention was paid to the evaluation of acceptance of the new programme elements (such as the lesson about drug use) in the new setting, both among teachers and students. Despite more in-depth training for Indonesian teachers than in Uganda, the process evaluation in Indonesia showed that the support and training for teachers do not meet their needs to be able to deal with conflicting norms in society and the school environment related to sexuality.

CONCLUSION

This paper shows that the systematic adaptation of ‘The World Starts With Me’ programme from Uganda to Indonesia resulted in changes that created a fit between the programme and the needs of the priority group and its implementers in Indonesia. Objectives, practical applications and programme materials were adapted, although the programme remained to a large extent the same as the original Ugandan programme. In a non-systematic approach to adaptation, the differences between the two settings may not have been observed, resulting in a programme not fitting well with the new setting and needs. On the other hand, differences may have dominated the process and jeopardized the core elements of the original programme by changing the logic model of change, theoretical methods or practical applications.

In the WSWM adaptation, IM provided a useful, in-depth framework. The IM approach specifies not only “what” should be done but also “how” to perform the tasks in adaptation. The step-by-step approach made explicit and visible the extent to which fidelity to the original programme could be retained and which core elements should remain and to what extent the programme needed to be modified to match with the new context. The use of IM also encouraged the involvement in each of the adaptation steps of young people, teachers and decision makers in the Advisory Board. This involvement turned out to be an intervention in itself that created commitment among relevant decision makers. This commitment contributed ultimately to the adoption and implementation of the DAKU programme.

For health promotion practitioners, using effective programmes beyond the settings for which they were originally developed can be challenging. Those wishing to adopt previously developed and tested programmes must identify acceptable programmes (such as the Uganda programme), assess fit of the original programme within the new context and decide whether adaptation is necessary and appropriate. If adaptation is undertaken, practitioners must determine what should be adapted and what essential programme elements should be maintained. The essence of adaptation is comparing what would be optimal in the new situation with what is available in the original programme.

In the case study in this report, we followed the IM steps to compare the programme to be adapted with the needs of the new situation in a series of systematic processes. These processes began not with the programme itself, but at the first step of programme development—i.e. problem analysis. Starting from a comparison of health problems, behaviours, environment and their determinants in step 1, we continued by identifying desired changes and methods to produce that change. Both a strength and a drawback of the IM process for adaptation is the continuous comparison of what is

available and what is needed. The constant comparison of the logic models of the problem and change in the new situation with the logic models abstracted from the original programme can be difficult. One of the biggest challenges in this process is the necessary post hoc deconstruction of the intentions of the original programme’s developers. In the case study in this report, this process was facilitated because several of the programme adapters were very familiar with the Uganda programme and could develop “implied” logic models even when formal models were not available. In a situation where a practitioner is not familiar with the original programme and does not have direct communication with its developers, the underlying comparison tasks of adaptation are even more difficult.

Bartholomew and colleagues [24] describe another central difficulty in adaptation, which is the designation of parts of the original programme that should not be changed. Lee and colleagues [20] caution planners that when a programme is adapted in ways that modify its logic model of change, the programme is no longer evidence-based and may not be effective in the new population. This can be a major dilemma in programme adaptation, but adapters are not often helped by programme developers who generally do not have evidence at the level of programme components. So, we often do not know what constitutes essential elements and have difficulty protecting them when making changes in the original programme [38, 39]. Bartholomew and colleagues [24] have suggested that the programme’s core elements are, for most programmes, a combination of the following: (1) theoretical methods that are intended to change determinants of behaviour of the at-risk group and the environmental agents, (2) practical applications of the methods, including delivery channels, (3) characteristics of programme materials and messages, including cultural elements and (4) characteristics of programme implementation. In the adaptation described in this case, we paid particular attention to retaining most dimensions of these elements.

Despite the challenges, IM enabled the planning group for the Indonesian project to work through a series of tasks that resulted in an adapted programme that was well accepted by decision makers and is being implemented with good reach into the priority population and good fidelity to the intended theoretical methods and practical applications.

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