

Helpdesk Report: Effective behaviour change interventions

Date: 22 April 2016

Query:

What is the evidence on effective behaviour change interventions?

In particular, focus on where interventions are related to hygiene and sanitation, nutrition, gender based violence, indoor air pollution, family planning adoption, unsafe sex, motor vehicle driving in Malawi/sub-Saharan Africa/low income countries.

Provide information on both the nature of interventions, and evidence based factors that contribute to intervention success/failure.

Content

- 1. Overview**
- 2. Introduction**
- 3. Hygiene and sanitation interventions**
- 4. Nutrition interventions**
- 5. Gender based violence interventions**
- 6. Indoor air pollution interventions**
- 7. Family planning interventions**
- 8. Unsafe sex interventions**
- 9. Motor vehicle driving interventions**
- 10. Bibliography and abstracts**
- 11. Additional information**

1. Overview

This helpdesk provides a rapid analysis on the existing evidence related to effective behaviour change interventions. It has a particular focus on where interventions are related to hygiene and sanitation, nutrition, gender based violence, indoor air pollution, family planning adoption, unsafe sex, motor vehicle driving. The geographic focus is Malawi, but where necessary it draws on evidence from the wider sub-Saharan Africa region and other low income contexts. Where possible it presents information on both the nature of interventions, and evidence based factors that contribute to intervention success/failure.

For the themes of hygiene and sanitation, family planning adoption and unsafe sex, the resources included were limited by the time available for this report. An investigation with a more substantial timeframe would be likely to report many more resources than included here. Further research is needed to analyse the existing evidence for these themes. For the themes of nutrition, gender based violence, indoor air pollution and motor vehicle driving, the resources included were limited by the lack of evidence available. Further research is needed to produce evidence for these themes.

The literature that does exist suggests that while some progress has been made with regards to behaviour change interventions and health, there is still work to be done. A common pitfall

sees interventions lacking of attention what leads to behavioural change at the individual, interpersonal, and community levels. Guidelines would improve these interventions (Aboud & Singla 2012). Traditional beliefs, unavailability of medicine, barriers to access and a lack of trust can limit health care seeking behaviour. Behavioural change messages address these challenges (Chibwana et al. 2009).

There are many forms of behavioural change interventions, including mass media campaigns using television, radio and newspapers. Such campaigns have been shown to be successful. However, the services and products they promote must be available or the interventions will fail. Also, an enabling environment is needed to support behaviour change (Wakefield, Loken & Hornik, 2010). Successful interventions are likely to adopt several categories of techniques to increase the likelihood of learning, recalling and sustaining behaviour change (Briscoe & Aboud, 2012).

Hygiene and sanitation

It is well established that hand washing can reduce the risk of respiratory infections and diarrhoeal diseases (Pengpida & Peltzer, 2012). A 2015 Cochrane systematic review reported that hand washing promotion probably prevents around 30% of diarrhoea episodes in schools in low and middle income countries (LMICs) (Ejemot-Nwadiaro et al 2015).

Hygiene interventions are reported to be at least as effective as the other interventions (Fewtrell et al. 2005). In Malawi and many other African countries, infectious diseases cause many child deaths – a burden that could be reduced through hand washing (Pengpida & Peltzer, 2012). Other hygiene-based interventions, such as point-of-use water treatment, are known to be effective (Fewtrell et al. 2005). Hygiene knowledge and practices must be improved in both the community and healthcare settings. The availability of essential resources such as water, soap and toothpaste must be addressed. Interventions focusing on the hygiene of children and community hygiene behaviours have reported positive results and need to be tested at scale (Pengpida & Peltzer, 2012). For example, a study from Egypt reported significant reductions in prevalence of certain infectious diseases as a result of an intervention that involved both supervised hand washing and exposure to hygiene messages for school children (Talaat et al 2011). Anecdotal evidence from Uganda reported that as a result of a community based learning dentistry project, oral health improved and behaviour change was achieved (Macnab et al. 2010).

Innovative approaches to hygiene behaviour change, such as offering free product trials, have been shown to have positive results. Continuation of this behaviour change can be achieved through follow up contact with health workers through home visits. While such approaches do not resolve long term affordability, research suggests that social support can encourage ongoing behaviour (Wood, Foster & Kols, 2012).

Successful hygiene interventions must be built on understanding what motivates, facilitates, and hinders behaviour (Curtis & Cairncross, 2003). The advantages perceived by the target audience must be clear to facilitate behaviour change (Curtis et al. 1997, p. 122). With hygiene interventions factors other than health considerations, such as wanting to feel/smell clean, or wanting to conform to social norms, may also motivate behaviour change (Fewtrell et al. 2005).

Nutrition

Nutrition outcomes remain a concern in many countries, despite evidence suggesting that behaviour change interventions can improve the situation. Data on the design and implementation of nutrition behaviour change interventions is limited. Further assessment of the interventions that do exist is needed to gain an understanding of effectiveness. The limited evidence available suggests that interventions must overcome cultural barriers to

optimise feeding practices. Also impact pathways can allow assessment of behaviour change, developing an understanding of why interventions work/fail (Fabrizio, Van Liere & Pelto, 2014).

Research suggests that nutrition education interventions were well accepted and adopted in Malawi and resulted in improved nutrition. Through nutrition education, existing food resources could be better used enhancing the diets of their children. Further improvements may be limited by access to certain foods. Therefore nutrition education programmes must be combined with other strategies to improve nutrition (Hotz & Gibson, 2005).

Operational research from Nigeria on breastfeeding and antenatal care suggested that the success of interventions will depend on how clear the messages are. Specific information may be required, depending on the context. Men should be included in intervention strategies, as should religious leaders. Behaviour change interventions must be supported by practical support (ORIE, 2016a, ORIE, 2016b).

Evidence from Madagascar suggests nutrition interventions implemented between 2000 and 2005 such as training, interpersonal communication, community mobilisation, and mass media, resulted in positive behaviour change and broad-scale improvements of nutritional practices. The programme's success was in part due to its ability to synergise with existing health systems and community structures, supported through a mass media campaign (Guyon et al, 2009).

Evidence from a cluster randomised trial in Haiti reported preventive interventions including behaviour change components were more effective for reducing childhood undernutrition than traditional recuperative models. The development of mothers' clubs gave beneficiaries the opportunity to interact with programme health staff to discuss health, hygiene, and nutrition topics. Further research is needed into whether this approach would be appropriate for other contexts (Ruel et al, 2008).

Gender based violence

Evidence suggests that no single factor causes violence against women/girls (VAWG), nor is there a single pathway to perpetration (Fulu, Kerr-Wilson & Lang, 2014). In Malawi cultural practices and beliefs perpetuate gender-based violence. Interventions to reduce such violence should be developed, and be supported by political will. Public awareness activities could change attitudes, socio-cultural beliefs and values that perpetuate the violence. Interventions should be integrated into existing public health programmes, and in particular those that focus on reproductive health (Bisika, 2008). Data on HIV transmission indicate a link to gender and social inequalities. Interventions to prevent gender based violence must consider the social, legal, and political-economic environment in Malawi, which currently sustains unequal gender power relations and perpetuates violence against women. Public awareness must be increased and negative attitudes addressed. An enabling legal environment is needed to support behaviour change and protect women from gender based violence (Kathewera-Banda et al. 2005).

A summary of the available evidence on behaviour change to reduce VAWG found that rigorous evaluations of the effectiveness of communication campaigns are scarce. The studies that have been done focus on changes in awareness, attitudes and norms. No studies were identified that measured actual changes in violent behaviour or changes in rates of VAWG (Fulu, Kerr-Wilson & Lang, 2014). Evidence from South Africa of a multi-media health promotion project to reduce violence reached 86%, 25% and 65% of the target audiences through television, print booklets and radio, respectively. However, actual reductions in levels of domestic violence was not measured (Usdin et al. 2005). The evidence that awareness campaigns reduce the prevalence or incidence of VAWG is limited (Fulu,

Kerr-Wilson & Lang, 2014, Heise, 2011). Although such interventions may lead to an increase in awareness and knowledge (Fulu, Kerr-Wilson & Lang, 2014).

A literature review on gender based violence in Malawi exposed an evidence gap, with only six documents being identified that assessed gender based violence response and interventions, and only one was found to focus on gender based violence behaviour change (Mellish M, Settergren & Sapuwa, 2015). That programme was found to reduce school-related violence, and gender based violence, by delivering advocacy and legislation interventions among others. More work needs to be done to ensure a better understanding of gender-based violence is developed. It is recommended that future behaviour change interventions target pupils, teachers and parents, while supporting clubs and NGO or community-based organisation activities to sensitise pupils to their rights and responsibilities (CERT & DevTech, 2008).

Indoor air pollution

Indoor air pollution is linked to chronic obstructive pulmonary disease, respiratory infections, low birth weights, perinatal mortality, tuberculosis, cancer, and cataract. The worst cases can lead to death (Bruce, Perez-Padilla & Albalak, 2000). Exposure to pollution can be reduced by means of improved stoves, better housing, cleaner fuels and behavioural changes (Bruce, Perez-Padilla & Albalak, 2000).

Behaviour change interventions can be effective to reduce risk caused by indoor air pollution. When included in multilevel programmes, behaviour change techniques can be effective in reducing risk (Goodwin et al 2015). Evidence suggests that behavioural change strategies can reduce indoor air pollution exposure by 20%–98% in laboratory settings and 31%–94% in field settings. (Barnes 2014). Further research is needed to indicate how such approaches can play a more prominent role in reducing the impact of indoor air pollution (Goodwin et al 2015, Barnes 2014). Research must address the link between poverty and polluting fuels (Bruce, Perez-Padilla & Albalak, 2000). Evidence is particularly lacking from poor rural areas (Barnes, Mathee & Thomas, 2011).

Evidence that was found suggested specific local conditions such as behaviours and sociocultural circumstances are considered when planning interventions to improve pollution. The impact of interventions on different members of the family and society must be considered. Some interventions are known to have limited impact on the most vulnerable members of society. Behaviour change may be easier to achieve in families with access to wealth compared to those without (Fullerton, Bruce & Gordona 2008).

Evidence from South Africa indicated that overall indoor air pollution was reduced by a community counselling intervention. Health behaviour change was shown to be associated with reductions in child indoor air pollution exposure (Barnes, Mathee & Thomas, 2011). Research from Ethiopia suggests that social, cultural and financial constraints are barriers to reducing indoor pollution. Increasing awareness of indoor pollution was a step towards reducing exposure. Willingness to change practices was linked to knowledge. The cost of cleaner fuels and better stoves remained a barrier (Edelstein et al 2008). Access to clean fuel will change practices. Markets will then develop to meet the demand. The challenge is to reduce air pollution for those who are currently too poor to change practices (Smith 2004).

Family planning adoption

Men in many developing countries are often the primary decision-makers regarding use of family planning. A couple that fails to communicate reproductive intentions may have limited effective and sustained contraceptive use. A study that aimed to encourage contraceptive uptake by motivating Malawian men to communicate about family planning. An information–motivation–behavioural skills (IMB) model was employed, which works on the basis that

motivation to adopt a preventive practice and having adequate information lead to the activation of behaviour skills, leading to adoption and continuation of behaviour change. Results indicate that contraceptive use increased significantly after the intervention. Increased ease and frequency of communication within couples were the only significant predictors of uptake. The study found that men facilitated contraceptive use for their partners. Improving communication skills were shown to successfully enable men to help couples use a contraceptive (Shattuck et al. 2011).

As well as reported male influence over female fertility and family planning decisions, other family and community members may also have influence. A study on the socio-cultural context in which family planning decisions and fertility behaviours take place in Malawi found that while progress in this area has been made, there are several opportunities for further behaviour change interventions to improve family planning acceptance and use. Based on findings from the study, it was recommended that social and behaviour change communication strategies target everyone involved in family planning decisions. Strategies should consider issues including sexual desire, performance, roles, cultural preferences and health benefits. In some contexts it may be appropriate to include religious and traditional organisations in strategies (C-Change, 2012).

To achieve behaviour change in family planning, misconceptions and fears related to family planning must be addressed. Interventions should include targeted campaigns, activities, and accurate messages. Training may be provided to health providers to counsel those who experience side effects and to provide accurate information, allowing users to make an informed decision. The provision of such information may address some of the socio-cultural barriers and knowledge gaps that constrain the use of family planning (C-Change, 2012).

Family planning uptake may be limited by the availability of methods and distance between communities and health facilities. Health facilities must maintain adequate stock, as well as establishing outreach programmes using community health workers to raise awareness and to disseminate family planning methods and materials to remote areas. Evidence from Malawi indicates that in terms of materials, posters and charts were the most widely available forms of family planning communication materials in health facilities. Brochures, audiotapes, and videos, were less readily available. All communication materials should be culturally appropriate and as already noted, target those involved with family planning decision making. Literacy rates should be considered. Graphics and artwork may assist in areas of high illiteracy. There is potential for more interactive forums discuss family planning address socio-cultural barriers (C-Change, 2012).

A comprehensive district wide community based distribution and delivery of family planning services in Malawi was found to lead to increased approval of family planning. Knowledge of methods increased, as did prevalence rate and condom use. Such an approach was also shown to increase utilisation of public sources of family planning. In rural areas community based distribution agents can be used to provide family planning services (Kalanda, 2010). Although no data on cost is provided, it is recommended that a cost benefit analysis should be undertaken on such an intervention.

The results of a 2013 Cochrane systematic review on contraceptive effectiveness proved inconclusive in establishing what would help consumers choose their method of birth control. Further research is needed to understand how women respond to family planning options in clinics. It is suggested that trials could analyse the choice of birth control and how informed the patient is at a later date (Lopez et al 2013, P.2).

Significant improvements in knowledge, attitudes, discussion, and intentions were reported from a systematic review of family planning interventions. Socioeconomic development and organised family planning programs were found to change reproductive behaviour. The study reported that independent effects of family planning interventions proved difficult to identify.

Mass media communication strategies could reach large numbers of people and address cultural taboos. Existing evaluations were found to be focused on short-term outcomes such as changes in knowledge, attitudes beliefs, and discussion patterns rather than on behavioural changes. Positive results were found where mass media was combined with other intervention components such as social marketing or interpersonal communication interventions. Conditional cash transfer (CCT) interventions and a savings and credit program were found to be the most integrated in terms of demand- and supply-side strategies. Supply-side interventions to address family planning had positive effects on behaviour. Interventions to improve quality of care were less consistent in showing positive effects on family planning behaviours. More research is needed into long-term behavioural effects of interventions (Mwaikambo et al 2011).

Unsafe sex

Unsafe sex can expose those involved to various health risks, including HIV/AIDS. Changing sexual behaviour is regarded as essential to averting new infections (Limaye et al. 2012) (Bello et al. 2011). A national behaviour change interventions strategy for HIV/AIDS was adopted in Malawi in 2003. The strategy aimed to address two main national problem behaviours - unsafe sexual and reproductive health practices and inconsistent health seeking behaviours. The strategy aimed to encourage safer sex practices, reducing people with multiple sexual partners, and increasing condom use. It also aimed to improve health-seeking behaviour by increasing the number people accessing health services and increasing the number of women delivering with skilled personnel. Within the strategy, behaviour change interventions focused on addressing barriers including knowledge gaps, low self-risk perception, a lack of community dialogue, stigmatisation, gender inequalities, harmful sexual and reproductive health practices, lack of community involvement in relevant activities and poor patient/service provider relationships (NAC, 2003). No data was presented in the strategy to assess its effectiveness. However, it is a useful document to understand the policy context.

Research suggests that safe sex (and in particular those promoting HIV prevention) behaviour change messages are widespread in Malawi. However, adoption rates of recommended behaviour remains low. Organisational capacity and inconsistent messages about condom use may be reducing the impact of interventions. The national strategy fails to consider the socio-cultural environment and its impact on behaviour change. All interventions should consider interpersonal influences and social contexts if behaviour change is to be achieved. A mistrust of information sources must also be addressed (Houston & Hovorka, 2007). A multilevel approach is recommended with behavioural HIV prevention being integrated with biomedical and structural approaches, and treatment for HIV infection (Coates, Richter and Caceres 2008).

Evaluation of a peer-education HIV/AIDS prevention programme in Malawi reported a resulting increase in condom use for sex workers with paying partners and increased condom distribution. However, the programme did not increase in condom use with non-paying partners of sex workers. Increased knowledge was not found to change behaviour in this case. Further research is needed to understand the results. From the evidence that does exist comes the recommendation that future interventions are tailored to the needs of the beneficiaries (Walden, Mwangulube & Makhumula-Nkhoma, 1999).

A systematic review found that reducing HIV and sexually transmitted infections among sex workers and their clients may have had an effect in reducing the overall transmission of HIV/STIs. Further research is needed to establish which behavioural change strategies are effective (Wariki et al 2012).

The BRIDGE programme, which focused on behaviour change to prevent HIV transmission in Malawi between 2003 and 2009, reported that exposure to the interventions to be high. Trust

and an enabling environment were developed. Risk perception was enhanced. Abstinence, faithfulness and condom use increased, as did knowledge about HIV/AIDS. Exposure to the programme was positively associated with education, suggesting future interventions should consider how to reach individuals with low literacy levels (BRIDGE 2014). Findings from the second phase of the BRIDGE programme, which ran from 2009 to 2014, recommended that communication interventions are used to achieve effective HIV risk reduction (Kaufmana et al, 2014).

Motor vehicle driving

The Africa region has 10% of the world total collision fatalities and that human behaviour and incapacitation causes more than 85% of the deaths. Limited evidence of interventions was found in the literature. Interventions that had been evaluated reported mixed effectiveness and research methodologies used had inconsistent validities (Chan, 2010).

The evidence on traffic education campaigns in developing countries is limited (Afukaar, 2003). Interventions to promote safe behaviours through social marketing, legislation, and law enforcement may reduce road accidents. National institutions must have their capacity strengthened to undertake further research on road injuries (Mock et al 2004).

For such campaigns to be successful, the benefits to adopting behaviour change must be clear. To use police enforcement to change behaviour depends on the ability to create a general and specific deterrence. The success of interventions will depend on their acceptance by most drivers. They must be accompanied by improved road design, appropriate speed limits and legal sanctions, as well as public education and information (Afukaar, 2003).

For road safety behaviour change interventions to be successful, they must be informed by accurate and timely data. It is also suggested that there is strong political will to create an enabling environment. It is also suggested that interventions that have proved successful in other contexts and regions could efficiently improve traffic safety (Chan, 2010). Recommendations from Mozambique suggest that private and public stakeholders become involved in public awareness interventions to lead to behaviour change (Romão et al. 2003).

In Ghana, a public information campaign using television aimed to improve road traffic safety. Evaluation showed the campaign had a wide reach, and messages were clear and appropriate. However, those without television were excluded. Alternative communication methods used in parallel could counter this problem. Language must also be considered for interventions. Behavioural change resulting from the campaign could not be established from the data available (Blantari et al. 2005). Driver behaviour can be highly influenced by targeted health promotion campaigns, targeting seat belt use, alcohol and drug regulation and monitoring (Coleman, 2014).

In Kenya, a public information campaign using various methods including radio and television and road safety education was not been found to reduce road fatalities. The campaign was criticised for not addressing broader road safety policy issues and for a lack of evidence to inform the strategy. For future campaigns to be successful, political will must be mobilised and further research completed (Odero et al. 2003).

2. Introduction

A critical review focused on changing health behaviours in developing countries found that evidence has indicated that some progress has been made, but that challenges still exist. Behaviour change interventions designed to change common practices to reduce morbidity and mortality require a common approach and must be evaluated. Behaviour change strategies need to focus on theories of behaviour change, evidence of effectiveness of

previous action and an in-depth understanding of the target audience. The literature on behaviour change interventions illustrates a number of pitfalls that must be avoided. These include a lack of attention to theories that address strategies of change at the individual, interpersonal, and community levels. Programs developed solely from a logic model, formative qualitative research, or a case-control study of determinants will have limited scope. Commonalities among behaviours allow generalisability. Whether aiming to address nutrition, hygiene or health issues, the theories behind behaviour change interventions should be relevant across themes. If guidelines for best practices in interventions and programs are consistent across themes, this allows for assessment for effectiveness (Aboud & Singla 2012).

Mass media campaigns often use television, radio and newspapers to expose high proportions of large populations to messages. Exposure is generally passive. Such campaigns compete with factors, such as pervasive product marketing, powerful social norms, and behaviours driven by addiction or habit. Mass media campaigns have been found to produce positive changes or prevent negative changes in health-related behaviours across large populations. The success of such campaigns may be reliant on concurrent availability of services and products, availability of community-based programmes, and policies that support behaviour change through an enabling environment. Further investment in longer better-funded campaigns is needed to achieve adequate population exposure to media messages (Wakefield, Loken & Hornik, 2010).

Behaviour change communication is vital for health promotion. A review by Briscoe & Aboud (2012) focused on 24 interventions and programs designed to encourage the use of bed nets, hand washing, face washing and complementary feeding. The authors organised the techniques prevented under the following six categories:

1. Information
2. Performance
3. Problem solving
4. Social support
5. Materials
6. Media.

The review intentionally included interventions that had at least one positive behavioural or objective outcome. Therefore the variation in effectiveness was too small to permit meaningful correlations between techniques. The review does however provide useful comment on combinations of techniques. The most successful interventions were reported to engage participants at the behavioural, social, sensory, and cognitive levels, through the use of three or even four categories of techniques. Engaging multiple domains with different processes increases the likelihood of learning, recalling and sustaining the behaviour change. It is recommended that a systematic approach to interventions is taken, where by various technique categories are implemented depending on the target audience and behaviour (Briscoe & Aboud, 2012).

Evidence suggests that interventions that include multiple techniques of behaviour change, are effective in changing behaviour. The use of multiple techniques is shown to be better than relying on one or two methods. Interventions should be based on a broad theoretical framework, with inputs at various levels (from individual to societal) to make significant change that can be sustained. Due to the multiple risks faced by children in developing countries, those planning behaviour change interventions have moved away from the silo approach of addressing one problem and towards aiming for multiple changes (Aboud & Yousafzai, 2015).

In Malawi, despite having knowledge of health risks, health-seeking behaviour by individuals is often poor. Traditional beliefs, unavailability of medicine, barriers to accessing the formal health care system, and trust in traditional medicine can cause delays in seeking appropriate

health care. To facilitate prompt and appropriate health-seeking behaviour in Malawi, behavioural change messages must address the prevailing local beliefs and the socio-economic barriers to accessing health care (Chibwana et al. 2009).

3. Hygiene and sanitation interventions

In Africa, respiratory infections and diarrhoeal diseases cause many child deaths, yet the impact of both can be reduced through hand washing. Research has shown suboptimal hygiene knowledge and behaviour (hand washing, hand washing with soap and oral hygiene) among African children, contributes to diarrhoeal diseases, helminth infections, dental caries, periodontal diseases and other communicable diseases (Pengpida & Peltzer, 2012).

A 2015 Cochrane systematic review reported on the effects of promoting hand washing on the incidence of diarrhoea among children and adults in day-care centres, schools, communities and hospitals. Hand washing behaviour can be changed through hygiene education training, germ-health awareness, use of posters, leaflets, comic books, songs, and drama. The review found that hand washing promotion probably prevents around 30% of diarrhoea episodes in schools in low and middle income countries (LMICs), although the evidence available is of low quality. Moderate quality evidence suggested that hand washing promotion in communities in LMICs prevents around 28% of diarrhoea episodes. Further research is needed to establish how to help people maintain long term hand washing habits (Ejemot-Nwadiaro et al 2015).

A 2005 systematic review focused on water, sanitation, and hygiene interventions designed to reduce diarrhoea in less developed countries and a meta-analysis compares the effectiveness of the interventions (Fewtrell et al. 2005). The review found 46 studies met the inclusion criteria. All of the interventions detailed in these studies were found to reduce significantly the risks of diarrhoeal illness. Water quality interventions (point-of-use water treatment) were found to be more effective than previously thought, and multiple interventions (consisting of combined water, sanitation, and hygiene measures) were not more effective than interventions with a single focus.

A review focused on hygiene behaviours in Africa found that although attitudes towards hygiene were highly positive, knowledge and practices on or of hygiene were still low in both community and healthcare settings. In some instances, hygiene practices were related to the availability of resources such as water, soap and toothpaste. Interventions that aim to promote hygiene practices in children seem to be effective and need to be scaled up. Several innovative interventions to improve hand hygiene behaviours in the community setting have also shown promising results (Pengpida & Peltzer, 2012).

A study into the effects of hand hygiene campaigns on incidence of influenza-like illness (ILI), diarrhoea, conjunctivitis, and laboratory-confirmed influenza in Egypt found that the intervention was effective in reducing absenteeism from school caused by these illnesses. The study involve a randomised control trial in 60 schools. The campaign involved children in the intervention schools washing their hands twice each day and being subjected to health messages provided through entertainment activities. Compared to the control group, in the intervention group, overall absences caused by ILI, diarrhoea, conjunctivitis, and laboratory-confirmed influenza were reduced by 40%, 30%, 67%, and 50%, respectively ($p < 0.0001$ for each illness). Thus the intensive hand hygiene campaign was effective in reducing absenteeism (Talaat et al 2011).

The Brighter Smiles project involved a successful oral health intervention from Canada being adapted to the Ugandan context. Rural communities where hospitals could provide dental students with community based learning were identified. Four local schools were recruited. The intervention model involved daily at-school tooth-brushing and in-class education. With

the engagement of teachers, children, and families, the university students were involved in community-based learning. Anecdotal reporting suggests that as a result of the intervention, oral health improved, and new knowledge and practices were evident. However, formal data on the children's dental status is not presented (Macnab et al. 2010).

A qualitative study into motivating factors for Malawian women to use a household water treatment product called WaterGuard found that a free product trial distributed by antenatal clinics overcame initial cost barriers and demonstrated the product's health benefits. Continuation of this behaviour change was achieved through repeated contact with health workers during home visits. This also prompted non-users to try the product. The study found that the main barriers to sustained use were product affordability and seasonal rather than year-round treatment. Community and household social support was critical to consistent, ongoing behaviour in terms of the use and purchase of the product (Wood, Foster & Kols, 2012).

Hygiene interventions reduce contamination of hands, food, water, and fomites. They are reported to be at least as effective as the other interventions. Despite their effectiveness in disease prevention, health considerations may be less effective at motivating behaviour change in people than other factors aimed at inducing hygienic behaviours, such as wanting to feel/smell clean, and to conform to social norms (Fewtrell et al. 2005).

Efforts to achieve behaviour change in hygiene and sanitation are complex. To be successful interventions must be built on understanding what motivates, facilitates, and hinders behaviour such as adequate handwashing behaviour. Promoting hand soap as a desirable consumer product may be a more effective dissemination strategy than that of health campaigns. Further research is needed to measure the effectiveness of new and existing approaches to handwashing. Clarification is needed to establish when hands should be washed, how often, by whom, and in what manner. Indicators of handwashing compliance must be developed and validated (Curtis & Cairncross, 2003).

For interventions in water and sanitation to be successful, those planning their implementation must have an understanding of the advantages that will be perceived by those who change their behaviour. Analysis of the current channels of communication that are being employed by the target population will also be useful. "Modest investment in such systematic formative research with clear and limited goals is likely to be repaid many times over in the increased effectiveness of hygiene promotion programmes" (Curtis et al. 1997, p. 122).

4. Nutrition interventions

Despite substantial evidence suggesting that behaviour change interventions can improve infant feeding practices and growth, nutrition outcomes have not improved. This failure is thought to be due to a lack of understanding about what makes interventions successful and effective. There is a limited amount of data available on design and implementation of behaviour change interventions. Also, there are relatively few assessments of interventions in terms of scalability, cost effectiveness and sustainability. Despite this, a review on this topic reported two potential determinants emerging from the literature. These were firstly that effective studies identified cultural barriers and enablers to optimal feeding practices. Research was used to shape the intervention. Secondly, effective studies developed programme impact pathways to allow assessment of behaviour change. This allowed for an understanding to be developed of what lead to success (Fabrizio, Van Liere & Pelto, 2014).

A study aimed to assess the adoption of new complementary feeding practices among communities in Malawi introduced a participatory nutrition education intervention. Several of the intervention practices were found to be well accepted and adopted and were associated

with improved nutrition from the complementary diet. Such improvements were attributed mainly to greater total intakes and, to a lesser extent, enhanced dietary quality of the complementary foods. It was reported that through nutrition education, mothers were able to use existing food resources to improve complementary feeding practices. This enhanced adequacy of energy and several micronutrients in the complementary diets of their children. Further improvements to diet may be limited by the access to high-quality, nutrient-dense foods. It is recommended that nutrition education programmes are combined with other strategies that provide additional micronutrients (eg, fortified complementary foods, micronutrient sprinkles, increased availability to animal source foods). A combined approach would optimise benefits to the population, but a longer time period would be needed to demonstrate impact on health (Hotz & Gibson, 2005).

Findings from operations research on exclusive breastfeeding (EBF) and antenatal care (ANC) services in Nigeria by the Working to Improve Nutrition in Northern Nigeria (WINNN) programme provides useful recommendations on behaviour change for improved nutrition interventions (ORIE, 2016a, ORIE, 2016b).

With regards to EBF, in the short term, it is recommended that messages on the water content in breastmilk are strengthened. Specific information, education and communication materials should be developed aimed specifically at overcoming the notion that infants will dehydrate if not given additional water. Examples of exclusively breastfed babies could be used in advocacy efforts. Interventions should also target men, emphasising the need for them to counsel women. Religious leaders could also strengthen the advocacy. In the context of Northern Nigeria, advocacy approaches for older women may include the use of songs and participatory approaches. Practical support on breastfeeding must also be provided. In the longer term, terms in a local language may need to be developed to encapsulate meaning, particularly for new or uncommon behaviour (ORIE, 2016a).

With Regards to ANC, it is recommended that a targeted advocacy strategy for adolescent girls is developed. This could include small group meetings to provide a safe space to discuss ANC and its benefits. Fears could be expressed and reassurance provided. Advocacy messages to strengthen women's understanding of pregnancy problems and emphasise the ANC benefits. Interventions must also target men, explicitly encouraging their financing of ANC attendance. Religious leaders must be engaged. Strategies should make women aware of ANC entitlements. Such information should be shared with health workers, through collaboration with maternal health programmes (ORIE, 2016b).

Madagascar has a serious problem with child stunting, maternal malnutrition, and infant mortality. A nutrition project based on the Essential Nutrition Actions (ENA) framework included various interventions such as training, interpersonal communication, community mobilisation, and mass media. Data was collected between 2000 and 2005. Results indicated an increase in the rate of initiation of breastfeeding within 1 hour of birth (32% to 68%), the rate of exclusive breastfeeding of infants under 6 months of age (42% to 70%), the rate of continuation of breastfeeding at 20 to 23 months (43% to 73%), the rate of feeding children the minimum recommended number of meals per day at 6 to 23 months (87% to 93%), the rate of iron-folic acid supplementation during pregnancy (32% to 76%), and the rate of postpartum vitamin A supplementation (17% to 54%). The project resulted in broad-scale improvements of nutritional practices. This success is thought to be in part due to the projects ability to maximise contacts using multiple program opportunities within existing health systems and community structures, supported through a mass media campaign (Guyon et al, 2009).

A cluster randomised trial focused on two World Vision programmes in Haiti reported that preventive interventions, which included behaviour change and communication components, were more effective for the reduction of childhood undernutrition than a traditional recuperative model. The programme offered a range of services to women and children. The

development of mothers' clubs, where small groups of beneficiaries gather with programme health staff to discuss health, hygiene, and nutrition topics in the context of the programme's behaviour change and communication strategy. The preventive model included a precise schedule to ensure that delivery of the information was age-specific and reached caregivers at the time when they most need the information. The recuperative model involved learning sessions designed to address topics of relevance for undernourished children, such as the causes of undernutrition, nutritious recipes, feeding during illness, and hygiene in food handling and storage. The study concludes that the preventive approach in the context of Haiti is effective, but more research is needed to strengthen the implementation and targeting of preventive models of delivering nutrition interventions to accelerate progress in preventing childhood undernutrition in other programmatic and geographical contexts (Ruel et al, 2008).

5. Gender based violence interventions

Gender based violence in Malawi has an impact on both men and women, although the impact on women is greater. Men reportedly abuse women through battery, abusive language and forced labour. Women abuse men by not giving them food and engaging in extra marital affairs. In Malawi cultural practices and beliefs, such as dowry payments, polygamy, patriarchy, male mobility, forced marriage among others, perpetuate gender-based violence. To address gender based violence, governments, civil society and international organisations must acknowledge the exact extent of the problem. Interventions aimed at primary prevention of violence should be developed. These should include sustained public awareness activities aimed at changing the attitudes, socio-cultural beliefs and values that perpetuate violence against women and give higher priority to combating all forms of violence in public health as well as judiciary, education, and social service programmes. Interventions should be integrated into existing programmes for the prevention of HIV and AIDS. Reproductive health services should be used as entry points for identifying and supporting women in abusive relationships and for delivering referral or support services. Health systems must be strengthened so that they can respond to violence and in particular address the barriers and stigma that prevent abused persons to seek help. This includes supporting mental health services to address violence against women and children as an important underlying factor in women's mental health problems (Bisika, 2008).

It is argued that the connections between sexual violence, gender inequality, and HIV transmission in Malawi make HIV/AIDS a gendered pandemic. Patterns of HIV transmission are shown to be structured by gender and social inequalities. The nature and scale of sexual violence impacts both on women's vulnerability to HIV infection and on women's sexual and reproductive health rights. The social, legal, and political-economic environment in Malawi sustains unequal gender power relations that tolerate the perpetuation of violence against women. Although effective behaviour changing interventions are not specifically addressed, it is made clear that public awareness must be increased and attitudes and practices that infringe on these rights must be addressed. Alongside this, an enabling legal environment must be created to protect women from gender based violence. Advocacy efforts must be increased for enactment, reform and implementation of laws and policies to address this concern. It argues that sexual and reproductive rights are intrinsic to human rights. A right to information and education is an important component of these rights (Kathewera-Banda et al. 2005).

A 2015 literature review explored gender based violence response in Malawi through identification and synthesis of existing studies and key government documents. The review reported that many of the studies included were conducted to assess the gender based violence situation prior to the implementation of an intervention to address it. This information was then used to design interventions, or to establish a baseline against which its effects could be measured. Evaluations of interventions were extremely limited. Only six documents assessed gender based violence response and interventions. Of these, only one intervention

- Safe Schools Program - was found to focus on gender based violence behaviour change (Mellish M, Settergren & Sapuwa, 2015).

The Safe Schools Program was implemented between 2003 and 2008 to reduce school-related violence. The program focused on advocacy for improved policy, legislation, and funding of prevention and response efforts for school-related gender-based violence. It included elements of community mobilisation, action planning, and implementation for behaviour change. The evaluation found that as a result of the interventions, the number of gender based violence cases reported by teachers decreased. The results of the study indicate that the concepts of gender and gender-based violence are not fully understood by pupils, teachers and community members. Increased sensitisation about gender-based violence in schools and child's rights is recommended. Pupils, teachers and parents should be targeted by behaviour change interventions. Interventions should support clubs and NGO or community-based organisation activities that can sensitise pupils on their rights and responsibilities (CERT & DevTech, 2008).

Evidence suggests that no single factor causes violence, nor is there a single pathway to perpetration. There are several interventions designed to reduce rates of VAWG, targeting various risk factors and operating across different settings. Many interventions use media including television, radio, the internet, newspapers, magazines and printed publications to increase knowledge, challenge attitudes and modify behaviour. Social norms marketing aims to change perceptions, attitudes and behaviours considered normal by the community. This will activate positive social norms, while discouraging harmful social norms. A summary of the available evidence found that while communication campaigns are common, rigorous evaluations of their effectiveness are scarce. Four strong evaluations on media and awareness raising campaigns to reduce VAWG were identified. All four were randomised trials with no control group. The evaluations identified measured changes in awareness, attitudes and norms but none measured actual changes in violent behaviour or changes in rates of violence against women and girls. There is limited evidence that awareness campaigns impact on the prevalence or incidence of VAWG. The few evaluations that do exist do not measure violence as an outcome. It is challenging to attribute changes to a specific campaign. It is argued that campaigns relying on a single-component are not intensive enough or sufficiently theory-driven to transform norms or change actual behaviours. However, some evidence suggests that awareness campaigns can lead to an increase in awareness and knowledge. Evidence on the impact of 'edutainment' on attitudes related to domestic violence is mixed. The more intense an intervention is, the more effective it appears to be (Fulu, Kerr-Wilson & Lang, 2014).

Qualitative and quantitative data suggest that physical and sexual violent behaviour may be entrenched by a variety of social norms and beliefs related to gender and family. Analysis of existing evidence shows that there is a lack of rigorous data available to inform behaviour change programming aimed at reducing VAWG. Evidence that does exist is poor to fair in strength due to methodological limitations. The evidence that does exist tends to be geographically based in the USA. Further research is needed in low and middle income countries. The research that does exist in these contexts tends to focus on genital cutting/mutilation. Further research is needed on other aspects of VAWG. Further research is also recommended to evaluate the impact of state fragility on gender based violence (Heise, 2011).

In South Africa, a multi-media health promotion project that aimed to address domestic violence was designed to impact at multiple mutually reinforcing levels - individual, community and socio-political environment. This design was in recognition that behavioural change interventions aimed solely at individuals have limited impact. The data available suggest that the intervention successfully reached 86%, 25% and 65% of audiences through television, print booklets and radio, respectively. A shift in individual knowledge on domestic violence was reported, as was a shift in attitude. Demonstrating actual reductions in levels of

domestic violence was not possible. However, from the data available, a strong association between exposure to intervention components and social change was clear (Usdin et al. 2005).

6. Indoor air pollution interventions

Existing evidence indicates that indoor air pollution increases the risk of chronic obstructive pulmonary disease and of acute respiratory infections in children in developing countries. It can have a negative impact on birth weight, as well as increasing the risk of perinatal mortality, pulmonary tuberculosis, nasopharyngeal and laryngeal cancer, cataract and lung cancer. The worst cases can lead to death (Bruce, Perez-Padilla & Albalak, 2000). In 2008 33% of the world's population was known to burn organic material for cooking, heating and lighting. This form of energy produces high levels of indoor air pollution, increasing the incidence of respiratory infections and other health problems. A review of the evidence on biomass fuel use and health reported that to be effective, interventions to reduce indoor air pollution must consider specific local conditions including user behaviours and sociocultural circumstances. Separating the kitchen from living areas or increasing the number of windows can reduce exposure to pollution. However, these interventions will not reduce risk for those who cook. Changing fuel type or introducing pre-processing may reduce pollution. Evidence suggests that lower emissions can be achieved in the poorest communities by modifying stove and energy use behaviours rather than by replacing stoves for less polluting models. For communities that purchase fuel, there may be a higher chance of success of changing stove types (Fullerton, Bruce & Gordona 2008).

Evidence suggests that using solid fuels to meet domestic energy need can cause premature death and chronic disease. It also contributes to wider economic, social, and environmental problems. Research has shown that behaviour change interventions are effective to reduce risk caused by indoor air pollution, including those using health communications approaches. A study into the evidence of effectiveness of behaviour change approaches in cleaner cooking interventions in resource-poor settings included forty-eight articles, which documented 55 interventions in 20 countries. The authors developed a scorecard of behaviour change effectiveness. Behaviour change techniques were shown to be used effectively as part of multilevel programs. Cooking demonstrations, the right product, and understanding of the barriers and benefits along the value chain were all shown to play a role. Theories and models of behaviour change adapted to the target audience and local context were found to often be absent. Further research needs to track and evaluate behaviour change and impact, not just technology disseminated, so that behaviour change approaches could then play a more prominent role in cleaner cooking interventions in resource poor settings (Goodwin et al 2015).

While it is known that behavioural change interventions can reduce child indoor air pollution exposure, little is known about the impact of behavioural change interventions to reduce indoor air pollution. There is also an evidence gap regarding how behaviour change theory has been incorporated into indoor air pollution behaviour change interventions. A 2014 review of the evidence suggests that behavioural change strategies have the potential to reduce indoor air pollution exposure by 20%–98% in laboratory settings and 31%–94% in field settings. However, the results must be interpreted with caution as the studies included are regarded as methodologically weak and are based on little or no theory. The author suggests further research is needed to evaluate the role of behavioural change strategies to reduce indoor air pollution exposure in developing countries as well as interventions that draw more strongly on existing behavioural change theory and practice (Barnes 2014).

The evidence that does exist suggests that exposure to pollution can be reduced by means of improved stoves, better housing, cleaner fuels and behavioural changes. The development and evaluation of interventions should consider the many aspects of energy supply and

utilisation. A coordinated set of community studies is required to develop and evaluate interventions in a variety of settings, together with policy and macroeconomic studies on issues at the national level, such as fuel pricing incentives and other ways of increasing access by the poor to cleaner fuels. A more systematic approach is required to develop the evidence base. Further research should explore the interrelationships between poverty and dependence on polluting fuels (Bruce, Perez-Padilla & Albalak, 2000).

Behavioural change has been promoted as a potential intervention strategy to combat the impact of indoor air pollution, but very little evidence exists of the impact of such strategies. Evidence is particularly lacking from poor rural areas. To address this evidence gap, a study in South Africa evaluated the impact of a community counselling intervention on stationary levels of emissions. The results show that overall indoor air pollution was reduced with the intervention group performing significantly better than the control group when stratified by burning location. The results provides tentative evidence that a health behaviour change is associated with reductions in child indoor air pollution exposure. Further epidemiological research is needed to determine the impact on health outcomes (Barnes, Mathee & Thomas, 2011).

Research from Ethiopia suggests that social, cultural and financial constraints are major challenges to implementation and success of interventions to reduce the impact of indoor pollution. Results from a pilot study suggest that once the participants were made aware of adverse effects of certain cooking practices, there was a willingness to change practices. However, the cost of cleaner fuels and better stoves was a barrier to actual change of practice. The authors concluded that increased awareness of the negative health-effects of indoor pollution was the first step in implementing a programme to reduce exposure (Edelstein et al 2008).

The risks of indoor air pollution are well documented. There is a severe lack of research into the interventions that might effectively reduce these risks, this includes a lack of research into interventions focused on changing behaviours. If people are given resources and access, are likely to move to vented combustion and clean fuels by choice. Markets will then develop to meet the demand. The challenge is to achieve behaviour shift before people are wealthy. Factors leading to adoption of any cleaner device extend well beyond the technical and economic to the social, cultural, and perceptual. Marketing, education, advertising, and other avenues directed at assessing and influencing behaviour will have important roles to play. Research into interventions would not be inexpensive and highly cost-effective as a means to address the large exposures to indoor air pollution currently being experienced widely in developing countries (Smith 2004).

7. Family planning interventions

Men in many developing countries are often the primary decision-makers regarding use of family planning. A couple that fails to communicate reproductive intentions may have limited effective and sustained contraceptive use. A study that aimed to encourage contraceptive uptake by motivating Malawian men to communicate about family planning. An information–motivation–behavioural skills (IMB) model was employed, which works on the basis that motivation to adopt a preventive practice and having adequate information lead to the activation of behaviour skills, leading to adoption and continuation of behaviour change. Results indicate that contraceptive use increased significantly after the intervention. Increased ease and frequency of communication within couples were the only significant predictors of uptake. The study found that men facilitated contraceptive use for their partners. Improving communication skills were shown to successfully enable men to help couples use a contraceptive (Shattuck et al. 2011).

A 2013 Cochrane systematic review focused on strategies for contraceptive effectiveness. However, the studies that were included had different types of participants and programs, making it hard to say for certain what would help consumers choose their method of birth control. "For presenting pregnancy risk data, one trial showed that effectiveness categories were better than pregnancy numbers. In another trial, audiovisual aids worked better than the usual oral presentation. Strategies should be tested in clinical settings and measured for their effect on contraceptive choice. More detailed reporting of intervention content would help in interpreting results. Reports could also include whether the instruments used to assess knowledge or attitudes were tested for validity or reliability. Follow-up should be incorporated to assess retention of knowledge over time. The overall quality of evidence was considered to be low for this review, given that five of the seven studies provided low or very low quality evidence". (Lopez et al 2013, P.2).

As well as reported male influence over female fertility and family planning decisions, other family and community members may also have influence. A study on the socio-cultural context in which family planning decisions and fertility behaviours take place in Malawi found that while progress in this area has been made, there are several opportunities for further behaviour change interventions to improve family planning acceptance and use. Based on findings from the study, it was recommended that social and behaviour change communication strategies target everyone involved in family planning decisions. Strategies should consider issues including sexual desire, performance, roles, cultural preferences and health benefits. In some contexts it may be appropriate to include religious and traditional organisations in strategies (C-Change, 2012).

Insufficient knowledge about contraceptive methods is a barrier for family planning uptake for many women. Also, fear of social disapproval, potential side effects also create barriers. Health concerns, and women's perceptions of their husbands' opposition may also influence family planning decisions (Cleland et al 2006). It is well documented in the literature that women's reproductive health decisions are shaped by the norms and beliefs of the community and by the level of autonomy experienced by women (Rutenberg & Watkins, 1997, Elfstrom & Stephenson, 2012, Stephenson et al. 2007). To achieve behaviour change in family planning, misconceptions and fears related to family planning must be addressed. Interventions should include targeted campaigns, activities, and accurate messages. Training may be provided to health providers to counsel those who experience side effects and to provide accurate information, allowing users to make an informed decision. The provision of such information may address some of the socio-cultural barriers and knowledge gaps that constrain the use of family planning (C-Change, 2012).

Family planning uptake may be limited by the availability of methods and distance between communities and health facilities. Health facilities must maintain adequate stock, as well as establishing outreach programmes using community health workers to raise awareness and to disseminate family planning methods and materials to remote areas. Evidence from Malawi indicates that in terms of materials, posters and charts were the most widely available forms of family planning communication materials in health facilities. Brochures, audiotapes, and videos, were less readily available. All communication materials should be culturally appropriate and as already noted, target those involved with family planning decision making. Literacy rates should be considered. Graphics and artwork may assist in areas of high illiteracy. There is potential for more interactive forums discuss family planning address socio-cultural barriers (C-Change, 2012).

A comprehensive district wide community based distribution and delivery of family planning services in Malawi was found to lead to increased approval of family planning. Knowledge of methods increased, as did prevalence rate and condom use. Such an approach was also shown to increase utilisation of public sources of family planning. In rural areas community based distribution agents can be used to provide family planning services (Kalanda, 2010).

Although no data on cost is provided, it is recommended that a cost benefit analysis should be undertaken on such an intervention.

A systematic review of family planning interventions indicated that all programmes included reported significant improvements in knowledge, attitudes, discussion, and intentions. Socioeconomic development and organised family planning programs are believed to change reproductive behaviour. However, identifying the independent effects of family planning interventions has proved more difficult. Mass media communication strategies to promote family planning has the potential to reach large numbers of people and address cultural taboos. Of the nine studies that were focused on mass media interventions included in the review, eight were considered medium quality and one lower quality. Evaluations were focused on short-term outcomes such as changes in knowledge, attitudes beliefs, and discussion patterns. Reporting on behavioural changes was limited, but positive results were reported in two studies where mass media was combined with other intervention components such as social marketing or interpersonal communication interventions (Mwaikambo et al 2011).

28 studies that focused on family planning and interpersonal communication interventions were reviewed. The evidence in the majority (18) were of medium quality. Only a few studies included behavioural outcomes relating to contraceptive use and unintended pregnancies. Development approaches, which included four conditional cash transfer (CCT) programs and a savings and credit program, tended to be the most integrated in terms of demand- and supply-side strategies. Four out of five studies included were high quality. Overall, the review reported that supply-side interventions addressing access to family planning had positive effects on family planning behaviour. Interventions to improve quality of care were less consistent in showing positive effects on family planning behaviours. Little evidence was found to focus on the long-term behavioural effects of interventions. Further research is needed to inform decisions about scaling up or replication of interventions (Mwaikambo et al 2011).

8. Unsafe sex interventions

There is some overlap between this section and section 7 on family planning. Unsafe sexual practices can expose those involved to various health risks, including HIV/AIDS. In Malawi, the high rates of sexual transmission mean that changing sexual behaviour is crucial to averting new infections (Limaye et al. 2012). In Malawi and other hyper-endemic settings, such changes in sexual behaviour could avert thousands of new HIV infections (Bello et al. 2011).

In 2003, the Malawian National AIDS Commission (NAC) published a national behaviour change interventions strategy for HIV/AIDS and sexual reproductive health. The strategy was based on a literature review that highlighted two main national problem behaviours, firstly unsafe sexual and reproductive health practices, and secondly inconsistent health seeking behaviours. To address these problem behaviours, the strategy focused on promoting safer sexual and reproductive health practices, and promoting consistent health seeking behaviour. Safer sex practices include delaying first sexual intercourse, reducing the number of men, women and young people who have multiple sexual partners, and increasing the number of men, women and young people who use condoms correctly and consistently. Consistent health-seeking behaviour includes increasing the number people accessing HIV/AIDS and reproductive health services and increasing the number of women delivering with skilled personnel. Behaviour change interventions focused on addressing barriers including knowledge gaps, low self-risk perception, a lack of community dialogue, stigmatisation, gender inequalities, harmful sexual and reproductive health practices, lack of community involvement in relevant activities and poor patient/service provider relationships (NAC, 2003). A framework for monitoring and evaluation of the strategy is presented, but no data was

presented in this strategy paper. The strategy provides useful context when considering behaviour change interventions aimed at promoting safer sex in Malawi.

HIV-prevention messages on abstinence and faithfulness in Malawi are widespread, yet adoption of such behaviours has remained low. Individuals are known to draw on complex interpersonal social networks, often processing mixed messages regarding HIV prevention strategies and receiving negative messages regarding condom use. A study focused on the role of institutional and personal actors involved in Malawi's behaviour-change intervention strategy reported that the organisational capacity of actors may prevent Malawi from achieving a coordinated and effective decentralised response to the HIV epidemic. Inconsistent messages about condom use may also have an impact. The national strategy has come under criticism for overlooking the socio-cultural environment as a facilitator or inhibitor of behaviour change. Interpersonal influences and social contexts must be considered when creating a situation that may facilitate behaviour change. The inconsistencies and confusion exposed in Malawi generates a mistrust of information sources. Further research is required on the impact of mixed messages on behaviour-change HIV interventions (Houston & Hovorka, 2007).

A few years before the national strategy was published, a study was undertaken that evaluated a peer-education HIV/AIDS prevention programme in Malawi. The study found that the presence of sex worker peer educators led to an increase in condom use with paying partners and increased condom distribution. However, no increase in condom use with non-paying partners of sex workers was found. While some behaviour change had been achieved, the lack of an increase in condom use with non-paying partners is unexplained and is a cause for concern. Importantly it was noted that knowledge does not necessarily change behaviour. Condom use among sex workers is complex and further research is needed in this area. The results of this study illustrates a discrepancy between knowledge, risk, awareness and actual behaviour that needs to be addressed. Future interventions must be tailored to the needs of the beneficiaries (Walden, Mwangulube & Makhumula-Nkhoma, 1999).

A more recent study into sexual behaviour in Malawi found that there were significant reductions in the proportion of 15–19 year olds having sex, the proportion of men having sex with multiple partners and significant increases in condom use by men with multiple partners. Prevalence of HIV dropped from 26% to 15% in urban areas among pregnant women and reduced by 40% among women aged 15–24 years during the same period. However, prevalence remained at ~12% in rural areas. The results suggest that the declines in prevalence in urban areas were associated with the behaviour changes. The authors explain that in urban Malawi the reduction in incidence is likely to be linked to the reduction in the number of men with multiple partners. Further research is needed to gain a better understanding of the causes of this change, so successful interventions can be rapidly expanded (Bello et al. 2011).

Communication and advice from various sources including parents, peers, and partners are important factors in influencing sexual behaviour. A better understanding of which forms of communication are effective can inform interventions. A study into talking about sex in Malawi found that communication regarding sex between parents and children, partners, and peers was not common. Where communication did exist it focused on negative consequences of sexual activity. In the Malawian context it is recommended that there is increased efficacy in talking about sex and protective sexual behaviours, including condom use. Interventions should focus on increasing communication skills and work to shift norms about sexual communication. Alternative mechanisms should be developed to assist individuals to gather information regarding their sexual behaviour (Limaye et al. 2012).

BRIDGE was a behaviour change programme implemented in Malawi between 2003 and 2009 to prevent HIV infections. A review of the relevant literature suggested that several psycho-social factors, including lack of awareness, stigma, low perceived risk and low self-

efficacy, were associated with people's unwillingness to get tested for HIV. The aim of BRIDGE was to address barriers to individual action and confront societal norms related to sexual risk behaviour through a mixture of interventions, including community-based activities and mass media messages delivered through local radio stations. Evaluation of the programme found exposure to the interventions to be generally high. Trust was generated in the communities, creating an enabling environment. Compared to baseline data, risk perception was found to be enhanced. Gains were also made in the areas of self-efficacy with regard to abstinence, faithfulness and condom use. Knowledge about HIV/AIDS was reported to increase from 67% to 77% by the end of the campaign. People exposed to BRIDGE activities had the highest increases of knowledge. Conversely those who were not exposed had the lowest level of knowledge. A steady increase in people's ability to reduce their number of sexual partners was recorded. Data showed significant improvements in HIV testing rates. At baseline 15% of respondents reported testing for HIV compared to 50% at the end of the project. Ability to talk to partners about condom use and to remain faithful to one partner increased with exposure. Stigma decreased with exposure to BRIDGE. Importantly, exposure to BRIDGE was positively associated with education. Future programming should consider how to reach individuals with low literacy levels (BRIDGE 2014).

BRIDGE II was the second phase of the USAID funded HIV prevention programme, which ran from 2009 to 2014. The goal was to promote normative behaviour change and to increase HIV preventive behaviours in Malawi. A study on the impact of the programme on psychosocial and behavioural variables found that communication interventions play an important role in not only affecting HIV-related behaviours themselves, but also critical factors that affect HIV behaviours, including knowledge and self-efficacy. Communication efforts are recommended to achieve effective HIV risk reduction (Kaufmana et al, 2014).

Countries neighbouring Malawi, including Mozambique, South Africa, and Zambia have shown no decrease in levels of HIV infection. A study that explores how to improve behavioural strategies to reduce HIV transmission argues that HIV prevention is neither simple nor simplistic. Interventions must achieve and sustain radical behavioural changes for individuals and at risk groups. Cognitive-behavioural, persuasive communications, peer education, and diffusion of innovation approaches to change can be beneficial, but novel theoretical and programmatic approaches are also required. A multilevel approach is recommended with behavioural HIV prevention being integrated with biomedical and structural approaches, and treatment for HIV infection (Coates, Richter and Caceres 2008).

A 2012 Cochrane systematic review reported that prevention efforts directed towards reducing HIV and sexually transmitted infections among sex workers and their clients may have had an effect in reducing the overall transmission of HIV/STIs in the general population. The results from seven randomised controlled trials (RCTs), two cluster-RCTs and four quasi-RCTs indicate that the interventions were effective in HIV/STI prevention, including reducing the incidence and prevalence of HIV and STIs. Further research is needed to establish which behavioural change strategies are effective (Wariki et al 2012).

9. Motor vehicle driving interventions

Africa has only 4% of the world's motor vehicles, yet more than 10% of the world total collision fatalities. A literature review found that traffic fatalities are increasing, and that human behaviour and incapacitation accounted for more than 85% of the contributing factors to these fatalities. 40% of fatalities were found to be pedestrians. There was limited evidence of countermeasures reported in the literature. The interventions that were found had mixed effectiveness and the research methods have inconsistent validity. The author of the review recommend transferring programmes from other contexts and regions with proven success to efficiently improving traffic safety. For public information campaigns to successfully change

behaviour, strong leadership is required. It is recommended this comes from an established strong leading agency. For such a campaign to be successful, it must be informed by accurate data (Chan, 2010).

The global burden of injuries is enormous, but often overlooked. Efforts to understand risk factors for the occurrence of injury based on evidence are needed and they must be translated into prevention programmes that are well designed and assessed. Alongside other interventions, those that promote safe behaviours through social marketing, legislation, and law enforcement may reduce the burden of injuries, including those caused by road accidents. The capacity of national institutions must be strengthened, so that they can undertake further research on injury control. This will allow the design and implementation of countermeasures that address injury risk factors and deficiencies in injury treatment; and to assess the effectiveness of such countermeasures (Mock et al 2004).

There is a paucity of traffic education campaigns in developing countries. This includes educating people about the burden of road traffic injuries. Both the public and the policy makers must be made aware of the benefits of safer speeds. A study into interventions to reduce speed in developing countries found that the success of police enforcement in changing human behaviour depends on the ability to create a general and specific deterrence. The former relies on the perception that traffic laws are enforced, the latter concerns actual experiences of prosecution. Interventions to reduce speed have the potential to reduce road traffic injuries and deaths in developing countries. Such interventions will only be successful when they are acceptable to most drivers through proper road design, appropriate speed limits and legal sanctions, as well as public education and information (Afukaar, 2003).

Road safety in Malawi remains less than satisfactory. Traffic crashes are increasing. Interventions are needed to reverse this trend and reduce the fatalities and injuries caused by them. Malawi lacks a comprehensive national transport policy. The Road Traffic Act is currently not being adequately enforced. Incompetent drivers and the presence of vehicles that are not-roadworthy are among the causes of the road safety situation in Malawi (Olukoga, 2007). No recommendations are made on how to achieve effective behaviour change for road safety.

In Ghana, a public information campaign using television was undertaken by the government, with the intention of changing behaviour and improve road traffic safety. An evaluation of the scheme, involving 50 drivers, found that the promoted messages were clear and appropriate. Also, the campaign was found to reach all members of the target audience. However, radio and flyers were suggested as alternative methods of communication, to not exclude those without a television. Despite the campaign being in two major languages, it was felt that the interventions may have been more successful if other languages were also considered. It was also reported that there was not enough emphasis on the change in behaviour being recommended (Blantari et al. 2005). It is not clear how effective the intervention was, as resulting driver behavioural change was not measured.

Further research from Ghana suggests that the increasing road traffic accidents should be considered as a public health problem, to be tackled using public health problem orientated approach and measures. It is suggested that driver behaviour and education can be highly influenced by targeted health promotion campaigns. Such interventions can target seat belt use, alcohol and drug regulation and monitoring – all of which are described as definite know preventive interventions. Countries that have successfully curbed incidents of road traffic accidents and related deaths, implemented well managed public health initiatives that influence driver behaviour (Coleman, 2014).

In Kenya, the National Road Safety Council was established in 1982. One of its mandates is to develop strategies to promote road safety and formulate a long-term programme for

effective road safety work in the country. In the 10 years after inception, traffic fatalities continued to increase dramatically. In recent years, the emphasis has been on primary preventive measures including provision of public information through radio and television, road safety education both within school and elsewhere and identification of hazardous road locations. These interventions have not been found to reduce road fatalities. To reduce the burden of road traffic crashes, interventions must go beyond public pronouncements and ad-hoc activities. Broader road safety policy issues must be addressed. A better understanding of underlying causes is needed. To achieve this, political will and commitment must be mobilised. Further research in this area is needed to provide data to inform decision-makers, stakeholders and the public about the magnitude of the problem (Odero et al. 2003).

A study concerned with traffic accidents in Mozambique states that public awareness is an important aspect reducing road injuries and deaths. Although no data is provided on effectiveness, it is recommended that all stakeholders (including schools, media, the private sector, the general public, civil society and religious groups) are involved in public awareness interventions to lead to behaviour change (Romão et al. 2003).

10. Bibliography and abstracts

Aboud F & Singla D. 2012. Challenges to changing health behaviours in developing countries: A critical overview. *Social Science & Medicine*; 75 (4)
<http://www.sciencedirect.com/science/article/pii/S0277953612003498>

This overview of recent research on health behaviour change in developing countries shows progress as well as pitfalls. In order to provide guidance to health and social scientists seeking to change common practices that contribute to illness and death, there needs to be a common approach to developing interventions and evaluating their outcomes. Strategies forming the basis of interventions and programs to change behaviour need to focus on three sources: theories of behaviour change, evidence for the success and failure of past attempts, and an in-depth understanding of one's audience. Common pitfalls are a lack of attention to the wisdom of theories that address strategies of change at the individual, interpersonal, and community levels. Instead, programs are often developed solely from a logic model, formative qualitative research, or a case-control study of determinants. These are relevant, but limited in scope. Also limited is the focus solely on one's specific behaviour; regardless of whether the practice concerns feeding children or seeking skilled birth attendants or using a latrine, commonalities among behaviours allow generalisability. A set of guidelines for best practices in interventions and programs is aimed for, as well as a metric to assess whether the program includes these practices. Some fields have approached closer to this goal than others. This special issue of behaviour change interventions in developing countries adds to our understanding of where we are now and what we need to do to realise more gains in the future.

Aboud F & Yousafzai A. 2015. Global health and development in early childhood. *Annual review of psychology*; 3 (66)
http://www.annualreviews.org/doi/abs/10.1146/annurev-psych-010814-015128?url_ver=Z39.88-2003&rft_dat=cr_pub%3Dpubmed&rft_id=ori%3Arid%3Acrossref.org&journalCode=psych

Health and nutritional risks co-occur in the lives of children under the age of 2 years who live in developing countries. The authors review evidence showing how these risks, in addition to inadequate psychosocial stimulation, prevent children from developing expected cognitive and language abilities. A systematic review and meta-analysis of 21 interventions aimed at enhancing stimulation and 18 interventions that provided better nutrition—all conducted since 2000—revealed that stimulation had a medium effect size of 0.42 and 0.47 on cognitive and

language development, respectively, whereas nutrition by itself had a small effect size of 0.09. The implementation processes of these interventions are described and compared. A number of unresolved issues are outlined and discussed, including ways to maximize parental health behaviour change, assess mediators that account for intervention effects, and expand the assessment of young children's brain functions that underlie language and cognition and are affected by nutrition and stimulation.

Afukaar F. 2003. Speed control in developing countries: issues, challenges and opportunities in reducing road traffic injuries, *Injury Control and Safety Promotion*; 10 (1-2)

<http://www.tandfonline.com/doi/abs/10.1076/icsp.10.1.77.14113>

Speed has been determined to be one of the most common contributing factors in vehicle crashes. This study explores vehicle speed as a factor in the causation of road traffic crashes, using the example of Ghana. It examines the effectiveness of various speed control measures, based on police reported traffic crashes in Ghana and published works on speed control measures in both industrialised and developing countries. In Ghana, pedestrians were the main victims of road traffic injuries. The dominant driver error assigned by traffic police was loss of control, with the underlying factor being excessive vehicle speeds. The 'speed factor' alone accounted for more than 50% of all Ghanaian road traffic crashes between 1998 and 2000. While the enforcement of speed limits by traffic police may not be affordable for most developing countries, rumble strips and speed humps were found to be effective on Ghanaian roads. Rumble strips installed on the main Accra-Kumasi highway reduced crashes by about 35% and fatalities by about 55%. Reducing vehicle speeds may be one of the most effective interventions to stem traffic crashes in low-income countries. However, setting lower speed limits is not an effective intervention without the traffic law enforcement resources to ensure that limits are followed. Developing countries must also look to other speed reduction measures such as speed bumps and rumble strips, roads that segregate high- and low-speed users, and technological solutions such as speed governors, as well as greater public awareness of the problem.

Barnes B. 2014. Behavioural Change, Indoor Air Pollution and Child Respiratory Health in Developing Countries: A Review. *International Journal of Environmental and Public Health*; 11 (5)

<http://www.mdpi.com/1660-4601/11/5/4607/htm>

Indoor air pollution caused by the indoor burning of solid biomass fuels has been associated with Acute Respiratory Infections such as pneumonia amongst children of less than five years of age. Behavioural change interventions have been identified as a potential strategy to reduce child indoor air pollution exposure, yet very little is known about the impact of behavioural change interventions to reduce indoor air pollution. Even less is known about how behaviour change theory has been incorporated into indoor air pollution behaviour change interventions. A review of published studies spanning 1983–2013 suggests that behavioural change strategies have the potential to reduce indoor air pollution exposure by 20%–98% in laboratory settings and 31%–94% in field settings. However, the evidence is: (1) based on studies that are methodologically weak; and (2) have little or no underlying theory. The paper concludes with a call for more rigorous studies to evaluate the role of behavioural change strategies (with or without improved technologies) to reduce indoor air pollution exposure in developing countries as well as interventions that draw more strongly on existing behavioural change theory and practice.

Barnes B, Mathee A & Thomas E. 2011. The impact of health behaviour change intervention on indoor air pollution indicators in the rural North West Province, South Africa. *Journal of Energy in Southern Africa*; 22 (3)

<http://www.scielo.org.za/pdf/jesa/v22n3/05.pdf>

Indoor air pollution has been associated with a number of health outcomes including child lower respiratory infections such as pneumonia. Behavioural change has been promoted as a potential intervention strategy but very little evidence exists of the impact of such strategies on actual indoor air pollution indicators particularly in poor rural contexts. The aim of this study was to evaluate a community counselling intervention on stationary levels of PM10 and carbon monoxide (CO) as well as CO measured on children younger than five. Using a quasi-experimental design, baseline data was collected in an intervention (n=36) and a control (n=38) community; the intervention was implemented in the intervention community only; and follow-up data was collected one year later amongst the same households. Despite the fact that indoor air pollution was reduced in both communities, the intervention group performed significantly better than the control group when stratified by burning location. The net median reductions associated with the intervention were: PM10=57%, CO=31% and CO (child)=33% amongst households that burned indoor fires. The study provides tentative evidence that a health behaviour change is associated with reductions in child indoor air pollution exposure. The intervention is relatively inexpensive and easy to replicate. However, more powerful epidemiological studies are needed to determine the impact on health outcomes.

Bello G, Simwaka B, Ndhlovu T, Salaniponi F & Hallett T. 2011. Evidence for changes in behaviour leading to reductions in HIV prevalence in urban Malawi. Sexually Transmitted Infections.

<http://sti.bmj.com/content/early/2011/03/23/sti.2010.043786.full.pdf+html>

At the epicentre of the HIV epidemic in Eastern Africa, HIV prevalence has appeared to stabilise in most countries. However, there are indications that the HIV epidemic in Malawi has recently declined. In this study, the authors analysed sexual behaviour survey data from Malawi between 2000 and 2004 and HIV prevalence data from the national antenatal clinic HIV surveillance system between 1994 and 2007 using a mathematical modelling technique that can identify associations between behaviour change and reductions in incidence. In Malawi between 2000 and 2004 there were significant reductions in the proportion of 15–19 year olds starting sex, the proportion of men having sex with more than one woman in the previous year and significant increases in condom use by men with multiple partners. In the same period, prevalence dropped from 26% to 15% in urban areas among pregnant women and reduced by 40% among women aged 15–24 years. In the same period, prevalence remained at ~12% in rural areas. Mathematical modelling suggests that the declines in prevalence in urban areas were associated with the behaviour changes and that, if the changes are maintained, this will have cumulatively averted 140 000 (95% interval: 65 000 to 160 000) HIV infections by 2010. Changes in sexual behaviour can avert thousands of new HIV infections in mature generalised hyper-endemic settings. In urban Malawi, the reduction in the number of men with multiple partners is likely to have driven the reduction in incidence. Understanding the causes of this change is a priority so that successful programmes and campaigns can be rapidly expanded to rural areas and other countries in the region.

Bisika T. 2008. Do social and cultural factors perpetuate gender based violence in Malawi?

http://repository.up.ac.za/bitstream/handle/2263/10229/Bisika_Do%282008%29.pdf?sequence=1&isAllowed=y

Gender based violence in Malawi exist at a level that requires special acknowledgement. A survey was conducted to assess how social and cultural factors affect gender-based violence in Malawi. The study revealed that both men and women are victims of gender based violence although women bare the brunt of the practice. Men abuse women through battery, use of abusive language, not providing some requirements and overworking them. Women abuse men by not giving them food and engaging in extra marital affairs. The study concluded that there are cultural practices and beliefs that perpetuate gender-based violence and these include "chiongo"-dowry, polygamy, "the notion of household head", male mobility,

forced marriage and not having sex with a woman when she is menstruating and during post-partum abstinence which can force a man to have extra-marital sex.

It is not clear if/where this paper was published.

Blantari J, Asiamah G, Appiah N & Mock C. 2005. An evaluation of the effectiveness of televised road safety messages in Ghana. International Journal of Injury Control and Safety Promotion; 12 (1)

<http://www.tandfonline.com/doi/full/10.1080/17457300512331342199>

The goal was to evaluate the effectiveness of recent televised advertisements conducted by the National Road Safety Commission in Ghana. These concerned speeding and alcohol-impaired driving and were targeted towards commercial drivers. Focus group discussions were conducted with 50 commercial drivers in four cities. Discussions addressed coverage, clarity and appropriateness of messages, including suggestions for improvements. Most discussants indicated that the messages were clear and appropriate. Television reached all participants in this urban group. However, they felt that other modes of communication, such as flyers and radio, should also be used to reach drivers who did not own televisions. A particular problem was language. The advertisements had been in English and Akan (the most common vernacular language). Participants wanted the messages diversified into more of the major Ghanaian languages. Some participants were unclear on the behaviour that the advertisements were telling viewers to take. Participants advocated greater involvement by police in road safety and called for laws banning the sale of alcohol at bus stations. The advertisements reached and were understood by most of the target audience. Opportunities for strengthening the messages included using other media; increasing the number of languages; and stressing the change in behaviour being recommended. Overall road safety activities would be strengthened by increasing accompanying law enforcement activities related to speed and alcohol-impaired driving. To the authors' knowledge this is the first formal evaluation of a road safety social marketing programme in a low-income sub-Saharan African country. This evaluation will hopefully assist Ghana and other similar countries in strengthening road safety work.

BRIDGE. 2014. Malawi's BRIDGE Project. Tools of Change Highlights Series, USA.

<http://www.toolsofchange.com/userfiles/Malawi%20Bridge%20Case%20StudyV2b.pdf>

BRIDGE was a 6-year behaviour change HIV prevention project implemented in Malawi from 2003 to 2009 by the Johns Hopkins Bloomberg School of Public Health Center for Communication Programs (CCP), in partnership with a number of Malawi-based organisations, and with funding from USAID. This document illustrates highlights from the programme.

This is a programme document and presents a case study. There is no indication it has been peer reviewed.

Briscoe C & Aboud F. 2012. Behaviour change communication targeting four health behaviours in developing countries: A review of change techniques. Social Science & Medicine; 75 (4)

<http://www.sciencedirect.com/science/article/pii/S0277953612002614/pdf?md5=4dcb95c19ed56587989e13261cd77102&pid=1-s2.0-S0277953612002614-main.pdf>

Behaviour change communication is vital for increasing the enactment of particular behaviours known to promote health and growth. The techniques used to change behaviour are important for determining how successful the intervention is. In order to integrate findings from different interventions, it is necessary to define and organise the techniques previously used and connect them to effectiveness data. This paper reviews 24 interventions and programs implemented to change four health behaviours related to child health in developing

countries: the use of bed nets, hand washing, face washing and complementary feeding. The techniques employed are organised under six categories: information, performance, problem solving, social support, materials, and media. The most successful interventions use three or even four categories of techniques, engaging participants at the behavioural, social, sensory, and cognitive levels. The authors discuss the link between techniques and theories. It is proposed that program development would be more systematic if researchers considered a menu of technique categories appropriate for the targeted behaviour and audience when designing their studies.

Bruce N, Perez-Padilla R & Albalak R. 2000. Indoor air pollution in developing countries: a major environmental and public health challenge. Bulletin of the World Health Organization; 78 (9)

<http://www.scielo.org/pdf/bwho/v78n9/v78n9a04.pdf>

Around 50% of people, almost all in developing countries, rely on coal and biomass in the form of wood, dung and crop residues for domestic energy. These materials are typically burnt in simple stoves with very incomplete combustion. Consequently, women and young children are exposed to high levels of indoor air pollution every day. There is consistent evidence that indoor air pollution increases the risk of chronic obstructive pulmonary disease and of acute respiratory infections in childhood, the most important cause of death among children under 5 years of age in developing countries. Evidence also exists of associations with low birth weight, increased infant and perinatal mortality, pulmonary tuberculosis, nasopharyngeal and laryngeal cancer, cataract, and, specifically in respect of the use of coal, with lung cancer. Conflicting evidence exists with regard to asthma. All studies are observational and very few have measured exposure directly, while a substantial proportion have not dealt with confounding. As a result, risk estimates are poorly quantified and may be biased. Exposure to indoor air pollution may be responsible for nearly 2 million excess deaths in developing countries and for some 4% of the global burden of disease. Indoor air pollution is a major global public health threat requiring greatly increased efforts in the areas of research and policy-making. Research on its health effects should be strengthened, particularly in relation to tuberculosis and acute lower respiratory infections. A more systematic approach to the development and evaluation of interventions is desirable, with clearer recognition of the interrelationships between poverty and dependence on polluting fuels.

The Centre for Educational Research and Training (CERT) and DevTech Systems, Inc. 2008. The Safe Schools Program: A Qualitative Study to Examine School-Related Gender-Based Violence in Malawi. United States Agency for International Development.

http://www.ungei.org/resources/files/Safe_Schools_Malawi_PLA_Report_January_8_2008.pdf

The Safe Schools Program (Safe Schools) is a five-year project under the U.S. Agency for International Development, Bureau for Economic Growth, Agriculture, and Trade, Office of Women in Development. The objective of Safe Schools is to create safe environments for both girls and boys that promote gender-equitable relationships and reduce school-related gender-based violence (SRGBV) by working in partnership with children, youth, parents, teachers, schools and communities. This report summarizes the results of the participatory learning and action (PLA) research activity conducted in October and November 2005 to help raise awareness, involvement, and accountability at national, institutional, community and individual levels of SRGBV in the Machinga District in the Southern Region of Malawi. Altogether, 952 pupils participated in the PLA workshops. The focus group discussions included more than 2,000 participants. In addition, 370 key informants including traditional leaders, initiation counselors, members of school management committees and parent teacher associations, head teachers, government Primary Education Advisers, religious

leaders, members of the school disciplinary committees (where these existed) and club patrons were interviewed.

C-Change. 2012. Barriers to Family Planning Use in Malawi Opportunities for Social and Behavior Change Communication. FHI 360, Washington DC, USA.

<https://c-changeprogram.org/sites/default/files/Barriers-to-Family-Planning-Use-Malawi.pdf>

C-Change commissioned this research study on the socio-cultural context in which family planning (FP) decisions and fertility behaviours take place in Malawi. The study had two broad and interrelated objectives:

1. Identify factors that facilitate or constrain the use of modern FP methods in Malawi
2. Assess the availability and use of FP communication materials in health facilities

This study was conducted to generate evidence to inform the development of effective social and behaviour change communication (SBCC) strategies and interventions to improve sexual and reproductive health (SRH) and the uptake of modern FP methods in Malawi. The study was conducted in five districts in Malawi: Lilongwe, Mzimba, Dedza, Machinga, and Thyolo. Urban populations were sampled in Lilongwe and rural populations were sampled in all five districts. The study findings highlight that while progress in FP knowledge and use has been made in study communities, there are several opportunities for SBCC interventions and other FP programs to improve FP acceptance and use.

Chen G. 2010. Road traffic safety in African countries – status, trend, contributing factors, countermeasures and challenges. International Journal of Injury Control and Safety Promotion; 17 (4)

<http://www.tandfonline.com/doi/abs/10.1080/17457300.2010.490920>

Road traffic crashes and injuries constitute a major health, economic and developmental challenge for many African countries. With only 4% of the world's motor vehicles, African roads witness more than 10% of the world total collision fatalities. With further motorisation, the number of road traffic crashes, injuries and fatalities are expected to grow. This study updates on the status, trends, causes, countermeasures and issues in traffic safety in African countries by reviewing studies published in the past 12 years. The study found that traffic fatalities continued its upward trend in recent years. Similar to those in motorised countries, the study identified that human behaviour and incapacitation account for more than 85% of the contributing factors reported by police in Africa. Unlike in developed countries, the victims of traffic casualties are primarily vulnerable road users. Pedestrians alone account for more than 40% of the total fatalities on African roads. Limited countermeasures were reported in the literature. The outcomes of these programmes are mixed and the research methods have inconsistent validity. Investigation in the feasibility of transferring proven programmes from motorised countries is suggested as an efficient measure for traffic safety improvement.

Chibwana A, Mathanga D, Chinkhumba J & Campbell C. 2009. Socio-cultural predictors of health-seeking behaviour for febrile under-five children in Mwanza-Neno district, Malawi. Malaria Journal; 8 (219)

<http://malariajournal.biomedcentral.com/articles/10.1186/1475-2875-8-219>

Prompt access to effective treatment for malaria is unacceptably low in Malawi. Less than 20% of children under the age of five with fever receive appropriate anti-malarial treatment within 24 hours of fever onset. This study assessed socio-cultural factors associated with delayed treatment of children with fever in Mwanza district, Malawi. It was a qualitative study using focus group discussions and key informant interviews. A total of 151 caregivers and 46 health workers participated in the focus group discussions. The majority of caregivers were able to recognise fever and link it to malaria. Despite high knowledge of malaria, prompt

treatment and health-seeking behaviour were poor, with the majority of children first being managed at home with treatment regimens other than effective anti-malarials. Traditional beliefs about causes of fever, unavailability of anti-malarial drugs within the community, barriers to accessing the formal health care system, and trust in traditional medicine were all associated with delays in seeking appropriate treatment for fever. The study has demonstrated important social cultural factors that negatively influence for caregivers of children under five. To facilitate prompt and appropriate health-seeking behaviour, behavioural change messages must address the prevailing local beliefs about causes of fever and the socio-economic barriers to accessing health care.

Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A & Innis J. 2006. Family planning: the unfinished agenda. *The Lancet*; 368

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(06\)69480-4/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(06)69480-4/abstract)

Promotion of family planning in countries with high birth rates has the potential to reduce poverty and hunger and avert 32% of all maternal deaths and nearly 10% of childhood deaths. It would also contribute substantially to women's empowerment, achievement of universal primary schooling, and long-term environmental sustainability. In the past 40 years, family-planning programmes have played a major part in raising the prevalence of contraceptive practice from less than 10% to 60% and reducing fertility in developing countries from six to about three births per woman. However, in half the 75 larger low-income and lower-middle income countries (mainly in Africa), contraceptive practice remains low and fertility, population growth, and unmet need for family planning are high. The cross-cutting contribution to the achievement of the Millennium Development Goals makes greater investment in family planning in these countries compelling. Despite the size of this unfinished agenda, international funding and promotion of family planning has waned in the past decade. A revitalisation of the agenda is urgently needed. Historically, the USA has taken the lead but other governments or agencies are now needed as champions. Based on the sizeable experience of past decades, the key features of effective programmes are clearly established. Most governments of poor countries already have appropriate population and family-planning policies but are receiving too little international encouragement and funding to implement them with vigour. What is currently missing is political willingness to incorporate family planning into the development arena.

Coates T, Richter L & Caceres C. 2008. Behavioural strategies to reduce HIV transmission: how to make them work better. *Lancet*; 23 (372)

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(08\)60886-7/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60886-7/abstract)

This paper makes five key points. First is that the aggregate effect of radical and sustained behavioural changes in a sufficient number of individuals potentially at risk is needed for successful reductions in HIV transmission. Second, combination prevention is essential since HIV prevention is neither simple nor simplistic. Reductions in HIV transmission need widespread and sustained efforts, and a mix of communication channels to disseminate messages to motivate people to engage in a range of options to reduce risk. Third, prevention programmes can do better. The effect of behavioural strategies could be increased by aiming for many goals (eg, delay in onset of first intercourse, reduction in number of sexual partners, increases in condom use, etc) that are achieved by use of multilevel approaches (eg, couples, families, social and sexual networks, institutions, and entire communities) with populations both uninfected and infected with HIV. Fourth, prevention science can do better. Interventions derived from behavioural science have a role in overall HIV-prevention efforts, but they are insufficient when used by themselves to produce substantial and lasting reductions in HIV transmission between individuals or in entire communities. Fifth, we need to get the simple things right. The fundamentals of HIV prevention need to be agreed upon, funded, implemented, measured, and achieved. That, presently, is not the case.

Coleman A. 2014. Road Traffic Accidents in Ghana: A Public Health Concern, and a Call for Action in Ghana, (and the Sub-Region). Open Journal of Preventive Medicine; 4 (11)

http://file.scirp.org/Html/2-1340383_51371.htm

This paper highlights the increasing problem of road traffic accident (RTA) related morbidity and mortality in Ghana, and the public health measures needed to control the problem. Descriptive data in the public domain from statutory bodies and media houses reports on country RTA information, as well as academic papers on the problem, were used as source of information about the problem. The observed trend in Ghana indicates that RTA related fatalities and injuries continue to be increasing, as morbidity and mortality factors since the year 2000. Most of the remedial measures suggested in academic papers, and state agencies measures to curb the RTA trend in Ghana to date, have discussed the problem in terms of injury and safety issues/measures. This paper suggests that the increasing RTAs with associated morbidity and mortality in Ghana need to be looked at more as a public health problem and priority that requires prompt tackling using a public health problem orientated approach and measures, than just as a safety problem due to RTAs', as is currently done.

Curtis V & Cairncross S. 2003. Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. The Lancet Infectious Diseases; 3 (5)

<http://www.sciencedirect.com/science/article/pii/S1473309903006066>

The authors set out to determine the impact of washing hands with soap on the risk of diarrhoeal diseases in the community with a systematic review with random effects meta-analysis. The data sources were studies linking handwashing with diarrhoeal diseases. Seven intervention studies, six case-control, two cross-sectional, and two cohort studies were located from electronic databases, hand searching, and the authors' collections. The pooled relative risk of diarrhoeal disease associated with not washing hands from the intervention trials was 1.88 (95% CI 1.31–2.68), implying that handwashing could reduce diarrhoea risk by 47%. When all studies, when only those of high quality, and when only those studies specifically mentioning soap were pooled, risk reduction ranged from 42–44%. The risks of severe intestinal infections and of shigellosis were associated with reductions of 48% and 59%, respectively. In the absence of adequate mortality studies, the potential number of diarrhoea deaths were extrapolated that could be averted by handwashing at about a million (1.1 million, lower estimate 0.5 million, upper estimate 1.4 million). Results may be affected by the poor quality of many of the studies and may be inflated by publication bias. On current evidence, washing hands with soap can reduce the risk of diarrhoeal diseases by 42–47% and interventions to promote handwashing might save a million lives. More and better-designed trials are needed to measure the impact of washing hands on diarrhoea and acute respiratory infections in developing countries.

Curtis V, Kanki B, Cousens S, Sanou A, Diallo I & Mertens T. 1997. Dirt and diarrhoea: Formative research for hygiene promotion programmes. Health Policy Planning; 12 (67)

<http://heapol.oxfordjournals.org/content/12/2/122.full.pdf+html>

Investment in the promotion of better hygiene for the prevention of diarrhoeal diseases and as a component of water and sanitation programmes is increasing. Before designing programmes capable of sustainably modifying hygiene behaviour in large populations, valid answers to a number of basic questions concerning the site and the intended beneficiaries have to be obtained. Such questions include 'what practices favour the transmission of enteric pathogens?', 'what advantages will be perceived by those who adopt safe practices?' and 'what channels of communication are currently employed by the target population?' A study of hygiene and diarrhoea in Bobo-Dioulasso, Burkina Faso, used a mixture of methods to address such questions. This paper draws on that experience to propose a plan of

preliminary research using a variety of techniques which could be implemented over a period of a few months by planners of hygiene promotion programmes. The techniques discussed include structured observation, focus group discussions and behavioural trials. Modest investment in such systematic formative research with clear and limited goals is likely to be repaid many times over in the increased effectiveness of hygiene promotion programmes.

Edelstein M, Pitchforth E, Asres G, Silverman M and Kulkarni N. 2008. Awareness of health effects of cooking smoke among women in the Gondar Region of Ethiopia: a pilot survey. BMC International Health and Human Rights, 8:10
<http://bmcinthealthumrights.biomedcentral.com/articles/10.1186/1472-698X-8-10>

The burning of biomass fuels results in exposure to high levels of indoor air pollution, with consequent health effects. Possible interventions to reduce the exposure include changing cooking practices and introduction of smoke-free stoves supported by health education. Social, cultural and financial constraints are major challenges to implementation and success of interventions. The objective of this study is to determine awareness of women in Gondar, Ethiopia to the harmful health effects of cooking smoke and to assess their willingness to change cooking practices. The authors used a single, administered questionnaire which included questions on household circumstances, general health, awareness of health impact of cooking smoke and willingness to change. 15 women were interviewed from each of rural, urban-traditional and middle class backgrounds. Eighty percent of rural women cooked indoors using biomass fuel with no ventilation. Rural women reported two to three times more respiratory disease in their children and in themselves compared to the other two groups. Although aware of the negative effect of smoke on their own health, only 20% of participants realised it caused problems in children, and 13% thought it was a cause for concern. Once aware of adverse effects, women were willing to change cooking practices but were unable to afford cleaner fuels or improved stoves. Increasing the awareness of the health-effects of indoor biomass cooking smoke may be the first step in implementing a programme to reduce exposure.

Ejemot-Nwadiaro R, Ehiri J, Arikpo D, Meremikwu M & Critchley J. 2015. Hand washing promotion for preventing diarrhoea. Cochrane Database of Systematic Reviews; 9.
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004265.pub3/abstract>

This review summarises trials evaluating the effects of promoting hand washing on the incidence of diarrhoea among children and adults in day-care centres, schools, communities, or hospitals. After searching for relevant trials up to 27 May 2015, the authors included 22 randomised controlled trials conducted in both high-income countries (HICs) and low- and middle-income countries (LMICs). These trials enrolled 69,309 children and 148 adults. Diarrhoea causes many deaths in children below five years of age, mostly in LMICs. The organisms causing diarrhoea are transmitted from person to person through food and water contaminated with faeces, or through person-to-person contact. Hand washing after defecation, or after cleaning a baby's bottom, and before preparing and eating food, can therefore reduce the risk of diarrhoea. Hand washing can be promoted through group or individual training on hygiene education, germ-health awareness, use of posters, leaflets, comic books, songs, and drama.

Hand washing promotion at child day-care facilities or schools in HICs probably prevents around 30% of diarrhoea episodes (high quality evidence), and may prevent a similar proportion in schools in LMICs (low quality evidence). Among communities in LMICs hand washing promotion prevents around 28% of diarrhoea episodes (moderate quality evidence). In the only hospital-based trial included in this review, hand washing promotion also had important reduction in the mean episodes of diarrhoea (moderate quality evidence). This is based on only a single trial with few participants and thus there is need for more trials to confirm this. Effects of hand washing promotion on related hand hygiene behaviour changes improved more in the intervention groups than in the control in all the settings (low to high

quality evidence). None of the included trials assessed the effect of handwashing promotion on diarrhoeal-related deaths, all-cause under-five mortality, or the cost-effectiveness of hand washing promotions. To conclude, hand washing promotion in HICs and LMICs settings may reduce incidence of diarrhoea by about 30%. However, less is known about how to help people maintain hand washing habits in the longer term.

Elfstrom K & Stephenson R. 2012. The role of place in shaping contraceptive use among women in Africa. PLOS ONE; 7 (7)
<http://www.ncbi.nlm.nih.gov/pubmed/22815784>

Contraceptive prevalence is low in the African region despite considerable family planning programmatic efforts. This study is the first to examine how community factors shape contraceptive use for married women in an entire region, comparing results across 21 African countries with a DHS in the last 5 years. The analysis builds on previous studies through an examination of the individual, household and community level factors that shape contraceptive use. The data used in this analysis were from nationally representative Demographic and Health Surveys completed between 2005 and 2009. A separate multi-level logistic model was fitted for the outcome of current modern contraceptive use in each country. After controlling for individual and household level factors, community level factors of demographics and fertility norms, gender norms and inequalities, and health knowledge remain significantly associated with contraceptive use, although the magnitude and direction of these community effects varied significantly across countries. The results highlight the importance of harnessing community level factors in planning interventions for increasing access to and utilization of modern contraceptive methods.

Fabrizio C, van Liere M & Pelto G. 2014. Identifying determinants of effective complementary feeding behaviour change interventions in developing countries. Maternal and Child Nutrition; 10
<http://onlinelibrary.wiley.com/doi/10.1111/mcn.12119/epdf>

As stunting moves to the forefront of the global agenda, there is substantial evidence that behaviour change interventions (BCI) can improve infant feeding practices and growth. However, this evidence has not been translated into improved outcomes on a national level because not enough is known about what makes these interventions work, for whom, when, why, at what cost and for how long. Our objective was to examine the design and implementation of complementary feeding BCI, from the peer-reviewed literature, to identify generalisable key determinants. 29 studies were identified that evaluated BCI efficacy or effectiveness, were conducted in developing countries, and reported outcomes on infant and young children aged 6–24 months. Two potential determinants emerged: (1) effective studies used formative research to identify cultural barriers and enablers to optimal feeding practices, to shape the intervention strategy, and to formulate appropriate messages and mediums for delivery; (2) effective studies delineated the programme impact pathway to the target behaviour change and assessed intermediary behaviour changes to learn what worked. It was found that BCI that used these developmental and implementation processes could be effective despite heterogeneous approaches and design components. Our analysis was constrained, however, by the limited published data on how design and implementation were carried out, perhaps because of publishing space limits. Information on cost-effectiveness, sustainability and scalability was also very limited. A more comprehensive reporting process and a more strategic research agenda is suggested, to enable generalisable evidence to accumulate.

Fewtrell L, Kaufmann R, Kay D, Enanoria W, Haller L, & Colford J. Promoting hand soap as a desirable consumer product may be a more effective dissemination strategy than that of health campaigns. The Lancet Infectious Diseases; 5 (1)
<http://www.sciencedirect.com/science/article/pii/S1473309904012538>

Many studies have reported the results of interventions to reduce illness through improvements in drinking water, sanitation facilities, and hygiene practices in less developed countries. There has, however, been no formal systematic review and meta-analysis comparing the evidence of the relative effectiveness of these interventions. In this article, the authors developed a comprehensive search strategy designed to identify all peer-reviewed articles, in any language, that presented water, sanitation, or hygiene interventions. They examined only those articles with specific measurement of diarrhoea morbidity as a health outcome in non-outbreak conditions. The titles were screened and, where necessary, the abstracts of 2120 publications. 46 studies were judged to contain relevant evidence and were reviewed in detail. Data were extracted from these studies and pooled by meta-analysis to provide summary estimates of the effectiveness of each type of intervention. All of the interventions studied were found to reduce significantly the risks of diarrhoeal illness. Most of the interventions had a similar degree of impact on diarrhoeal illness, with the relative risk estimates from the overall meta-analyses ranging between 0.63 and 0.75. The results generally agree with those from previous reviews, but water quality interventions (point-of-use water treatment) were found to be more effective than previously thought, and multiple interventions (consisting of combined water, sanitation, and hygiene measures) were not more effective than interventions with a single focus. There is some evidence of publication bias in the findings from the hygiene and water treatment interventions.

Fullerton D, Bruce N & Gordona S. 2008. Indoor air pollution from biomass fuel smoke is a major health concern in the developing world. Transactions of the Royal Society of Tropical Medicine and Hygiene; 102 (9)

<http://trstmh.oxfordjournals.org/content/102/9/843.full.pdf+html>

One-third of the world's population burn organic material such as wood, dung or charcoal (biomass fuel) for cooking, heating and lighting. This form of energy usage is associated with high levels of indoor air pollution and an increase in the incidence of respiratory infections, including pneumonia, tuberculosis and chronic obstructive pulmonary disease, low birthweight, cataracts, cardiovascular events and all-cause mortality both in adults and children. The mechanisms behind these associations are not fully understood. This review summarises the available information on biomass fuel use and health, highlighting the current gaps in knowledge.

Fulu E, Kerr-Wilson A & Lang J. 2014. What works to prevent violence against women and girls? Evidence Review of interventions to prevent violence against women and girls. Department for International Development, UK.

http://r4d.dfid.gov.uk/pdf/outputs/VAWG/What_Works_Inception_Report_June_2014_AnnexF_WG23_paper_prevention_interventions.pdf

Violence against women and girls (VAWG) is one of the most widespread abuses of human rights worldwide, affecting one third of all women in their lifetime. It is the leading cause of death and disability of women of all ages and has many other health consequences. Violence against women and girls is a fundamental barrier to eradicating poverty and building peace. Even the most conservative estimates measure national costs of violence against women and girls in the billions of dollars. To prevent VAWG we need to address the underlying causes of the problem. Evidence shows that no single factor causes violence, nor is there a single pathway to perpetration. Violence emerges from the interplay of multiple interacting factors at different levels of the social 'ecology'. These include genetic endowment, developmental history, personality profile, relationships dynamics, household and community structures, and the macro- and global level forces that shape prevailing norms, access to resources, and the relative standing of men versus women. Interventions that have the potential to reduce rates of VAWG are similarly many and varied. They may target one or more risk factors and operate across single or multiple settings.

The purpose of this paper is to examine the evidence base for the effectiveness of interventions to prevent violence against women and girls. This rapid assessment, along with the other working group papers, is designed to:

- inform the development of the What Works research agenda and priorities for innovation; and
- establish a baseline of the state of knowledge and evidence against which to assess the achievements of the What Works programme over the next five years.

In this paper the authors examine interventions that seek to specifically reduce different types of violence against women and girls as an outcome, and those that target key risk factors for violence perpetration and experiences. It is not an exhaustive list of interventions, but focuses on the most common and promising intervention areas, grouped by entry points or platforms.

Goodwin N, O'Farrell S, Jagoe K, Rouse J, Roma E, Biran A & Finkelstein E. 2015. Use of Behavior Change Techniques in Clean Cooking Interventions: A Review of the Evidence and Scorecard of Effectiveness. Journal of Health Communication: International Perspectives; 20 (1)
<http://www.tandfonline.com/doi/abs/10.1080/10810730.2014.1002958>

Despite decades of effort, around 2.8 billion people still rely on solid fuels to meet domestic energy needs. There is robust evidence this causes premature death and chronic disease, as well as wider economic, social, and environmental problems. Behaviour change interventions are effective to reduce exposure to harm such as household air pollution, including those using health communications approaches. This article reports the findings of a project that reviewed the effectiveness of behaviour change approaches in cleaner cooking interventions in resource-poor settings. The authors synthesized evidence of the use of behaviour change techniques, along the cleaner cooking value chain, to bring positive health, economic, and environmental impacts. Forty-eight articles met the inclusion criteria, which documented 55 interventions carried out in 20 countries. The groupings of behaviour change techniques most frequently used were shaping knowledge (n = 47), rewards and threats (n = 35), social support (n = 35), and comparisons (n = 16). A scorecard of behaviour change effectiveness was developed to analyse a selection of case study interventions. Behaviour change techniques have been used effectively as part of multilevel programs. Cooking demonstrations, the right product, and understanding of the barriers and benefits along the value chain have all played a role. Often absent are theories and models of behaviour change adapted to the target audience and local context. Robust research methods are needed to track and evaluate behaviour change and impact, not just technology disseminated. Behaviour change approaches could then play a more prominent role as the “special sauce” in cleaner cooking interventions in resource poor settings.

Guyon A, Quinn V, Hainsworth M, Ravonimanantsoa P, Ravelojoana V, Rambeloson Z, & Martin L. 2009. Implementing an integrated nutrition package at large scale in Madagascar: the Essential Nutrition Actions framework. Food and Nutrition Bulletin; 30 (3)
<http://www.ncbi.nlm.nih.gov/pubmed/19927603>

Madagascar has some of the highest rates of child stunting, maternal malnutrition, and infant mortality in sub-Saharan Africa. To improve infant and young child feeding practices, increase uptake of micronutrient supplements, and improve women's dietary practices through implementation of a nutrition project based on the Essential Nutrition Actions (ENA) framework. Interventions included training, interpersonal communication, community mobilisation, and mass media. Changes in practices were assessed through a comparison of data for children under 2 years of age from representative cross-sectional household surveys collected at baseline in 2000 (n = 1,200) and at the end of program implementation in 2005 (n = 1,760). The surveys were conducted in six districts with a population of 1.4 million. The rate of initiation of breastfeeding within 1 hour of birth increased from 32% to 68%, the rate of

exclusive breastfeeding of infants under 6 months of age increased from 42% to 70%, the rate of continuation of breastfeeding at 20 to 23 months increased from 43% to 73%, the rate of feeding children the minimum recommended number of meals per day at 6 to 23 months increased from 87% to 93%, the rate of iron-folic acid supplementation during pregnancy increased from 32% to 76%, and the rate of postpartum vitamin A supplementation increased from 17% to 54% ($p < .001$ for all changes). Modest improvement was achieved in maternal dietary practices during lactation and feeding of the sick child after illness. The results were inconclusive regarding food diversity for complementary feeding. No improvements were reported in increasing food intake during child illness or pregnancy. The ENA framework allows broad-scale improvement of nutritional practices to be achieved through the maximisation of contacts using multiple program opportunities within existing health systems and community structures and through mass media.

Heise L. 2011. What works to prevent partner violence: An evidence overview. Strive.
<http://strive.lshtm.ac.uk/system/files/attachments/What%20works%20to%20prevent%20partner%20violence.pdf>

This paper reviews the empirical evidence of what works in low- and middle-income countries to prevent violence against women by their husbands and other male partners. The review focuses on prevention programmes rather than responses or services, and on research-based evaluations rather than insights from practice. Changing gender norms, childhood exposure to violence, excessive alcohol use, women's economic empowerment and law and justice system reform are all explored in detail. The evidence that links each factor with the risk of partner violence is summarised and comment is made on the effectiveness of each prevention programme.

Hotz C & Gibson R. 2005. Participatory nutrition education and adoption of new feeding practices are associated with improved adequacy of complementary diets among rural Malawian children: a pilot study. European Journal of Clinical Nutrition; 59 (2)
<http://www.nature.com/ejcn/journal/v59/n2/full/1602063a.html>

This study aimed to introduce practices for improving complementary feeding and evaluate their adoption and association with improved dietary intakes. A quasi-experimental pilot study comparing dietary intakes from complementary foods among three intervention communities and one control community before and after the intervention, and adoption of new complementary feeding practices among intervention communities following the intervention. A participatory, nutrition education intervention based on four locally adapted lessons for complementary feeding practices designed to increase: (i) total complementary food intake; (ii) energy and nutrient density of the complementary diet, and; (iii) iron and zinc bioavailability of the complementary diet. Adoption rates for the four practices ranged from 25% for preparation of enriched porridges, to 10% for preparing soaked, pounded maize. The amount of complementary foods (g/day) and intakes of energy, animal protein, niacin, riboflavin, calcium, iron, and zinc, but not vitamin A, were significantly greater ($P < 0.05$) in the intervention compared to control group, as were the energy, iron, and riboflavin density, and the estimated amount of bioavailable iron and zinc. Several intervention practices were well accepted and adopted and were associated with improved adequacy of energy and nutrient intakes from the complementary diet. Such improvements were attributed mainly to greater total intakes and, to a lesser extent, enhanced dietary quality of the complementary foods.

Houston V & Hovorka A. 2007. HIV/AIDS messages in Malawi and their implications for effective responses. African Journal of AIDS Research; 6 (3)
<http://www.tandfonline.com/doi/abs/10.2989/16085900709490416?journalCode=raar20>

This paper explores the nature of HIV/AIDS education and information networks in Malawi, with a focus on Dedza district. The authors consider the role of institutional and personal actors involved in Malawi's recently instated and decentralised behaviour-change intervention strategy, as well as the form and function of interpersonal social networks that mediate this information. The research reveals that the organisational capacity of actors and the conflicting messages regarding promotion of condom use may prevent Malawi from achieving a coordinated and effective decentralised response to the HIV epidemic. The research shows that individuals draw on complex interpersonal social networks, often processing mixed messages regarding HIV prevention strategies and receiving negative messages regarding condom use. The paper discusses the implications of such inconsistencies and conflicts with actors, interpersonal social networks and the nature of the messages themselves for HIV/AIDS education in Malawi.

Kalanda B. 2010. Repositioning family planning through community based distribution agents in Malawi. *Malawi Medical Journal*; 22 (3)

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3345781/pdf/MMJ2203-0071.pdf>

This paper documents the results of a project for distributing family planning services in Malawi. The Malawian Government has been trying to revitalise family planning through repositioning. Therefore, between 1999 and 2003, the Government implemented a project that aimed at increasing the contraceptive prevalence rate (CPR) for modern family planning methods. The project aimed at increasing family planning awareness, relevance and use of contraceptive information and services through appropriate policies and programmes. The paper concludes with a recommendation to use trained agents to provide family planning services district wide. However, it also recommends that a cost benefit analysis of using these agents should be carried out using cost figures from organisations working with them.

Kathewera-Banda M, Gomile-Chidyaonga F, Hendriks S, Kachika T, Mitole Z and White S. 2005. Sexual violence and women's vulnerability to HIV transmission in Malawi: a rights issue. *International Social Science Journal*; 57

<http://onlinelibrary.wiley.com/doi/10.1111/j.1468-2451.2005.00582.x/full>

This article explores the connections between sexual violence, gender inequality, and HIV transmission. Beginning with the premise that HIV/AIDS is a gendered pandemic, the article demonstrates the ways that patterns of HIV transmission are structured by gender and social inequalities. This is due in part to the ways in which women's sexual and reproductive health choices are dominated by socio-cultural expectations and impacted by women's subordinate status in society. Using a country case study from Malawi, Africa, this research demonstrates how the nature and scale of sexual violence impacts both on women's vulnerability to HIV infection and on women's sexual and reproductive health rights. In particular, the article focuses on the conceptualisation of sexual violence, the transaction of sex within the local economy and fish industry, and the construction of sex and sexuality as this influences cultural practices and women's vulnerability to HIV transmission. This research finds that Malawian women are situated in a social, legal, and political-economic environment that sustains unequal gender power relations that tolerate the perpetuation of violence against women and leave them more vulnerable to HIV infection and the infringement of their sexual and reproductive health rights.

Kaufmana M, Rimal R, Carrasco M, Fajobia O, Sokoc A, Limayea R & Mkandawire G. 2014. Using social and behavior change communication to increase HIV testing and condom use: the Malawi BRIDGE Project. *AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV*; 26 (1)

<http://www.tandfonline.com/doi/pdf/10.1080/09540121.2014.906741>

While overall HIV prevalence in Malawi has decreased, it is still high in the southern region of the country. Behavioural prevention activities are crucial to continue the reduction in HIV

prevalence. Behaviour change is influenced by many factors. Previous work indicates knowledge about HIV transmission, self-efficacy to protect oneself from exposure, and accurate risk perception of one's susceptibility all impact sexual behaviour. The current study looks at the effects of a behaviour change communication program in Malawi called the BRIDGE II Project on psychosocial and behavioural variables. The program sought to address barriers to individual action and confront societal norms related to sexual risk behaviour through a mix of community-based activities and mass media messages delivered through local radio stations. Using cohort data (n = 594), the authors examined the effect of BRIDGE exposure on three variables that affect HIV behaviours: knowledge, self-efficacy, and risk perception, as well as two behavioural outcomes: HIV testing and condom use at last sex. Data were collected at baseline and for a midterm evaluation. Regression analyses showed exposure to BRIDGE was significantly associated with knowledge level ($\beta = 0.20$, $p < .001$) and self-efficacy ($\beta = 0.35$, $p < .001$) at midterm when controlling for baseline scores, but not risk perception. Psychosocial variables did not show a significant relationship to either behavioural outcome. However, program exposure was a significant predictor of both HIV testing in the past year (odds ratio [OR] = 1.40, $p < .001$) and condom use at last sex (OR = 1.26, $p < .05$). This study suggests such a communication intervention may play an important role in not only affecting HIV-related behaviours themselves, but also critical factors that affect HIV behaviours, including knowledge and self-efficacy. It is recommended that communication efforts around HIV risk reduction be increased.

Limaye R, Rimal R, Mkandawire G, Roberts P, Dothi W & Brown J. 2012. Talking about sex in Malawi: toward a better understanding of interpersonal communication for HIV prevention. Journal of Public Health Research; 1
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4140368/pdf/jphr-2012-2-e17.pdf>

The generalised AIDS epidemic in Malawi presents many challenges. As communication and advice from parents, peers, and partners are important factors in influencing sexual behaviour, understanding communication may provide insights into behaviour change programming. This mixed-method study used a household survey (n=1812) and 15 focus group discussions from the southern districts of Malawi to explore communication about sex and sexuality. Quantitative study findings point to the idea that self-efficacy, perceived benefits, and injunctive norms about talking about condom use are important factors influencing intentions to discuss condom use with partners. Qualitative study findings found that communication regarding sex between parents and children, partners, and peers was not common, and when there was communication, messages about sex focused on negative consequences of sexual activity. In Malawi, there is a need to increase efficacy in talking about sex and protective sexual behaviours, including condom use. Interventions should include components to increase communication skills, shift norms about sexual communication, and provide alternative mechanisms for individuals to gather pertinent information regarding their sexual behaviour.

Lopez L, Steiner M, Grimes D, Hilgenberg D & Schulz K. 2013. Strategies for communicating contraceptive effectiveness. Cochrane Database of Systematic Reviews; 4
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006964.pub3/abstract>

To make a good choice for family planning, people have to know how well different methods work. The pros and cons of the methods are important. People may choose birth control based on how well the method prevents pregnancy. Consumers also need to know what affects the usefulness of the birth control method. Through February 2013, the authors of this review did computer searches for randomised trials of ways to inform people about how well family planning methods prevent pregnancy. They wrote to researchers to find other trials. The new program could be compared to the usual practice or to another program or means of informing people. Seven trials were identified with a total of 4526 women. Two had several sessions for participants. One of those looked at the choice of birth control method. Women

in the test program more often chose to be sterilized or to use modern birth control than women with the usual counselling. In the other study, the groups had different sessions on family planning. Both groups increased their birth control use. However, the groups were similar at six months in using methods that work well to prevent pregnancy. Five trials had a single session for each group. In one, women learned more from a slide-and-sound format than from having a doctor talk to them. Another trial found that effectiveness categories were better than pregnancy numbers for comparing the methods. Still another study provided structured counselling using a flipchart on family planning methods. The groups were similar in choice of birth control and in numbers who still used their chosen method at three months. The last study used videos to inform couples about family planning. The groups were mostly similar in birth control use after the videos. But those who watched videos on motivation and on family planning did not choose pills or an injectable method as often as those who watched only the family planning video. The studies had different types of participants and programs. It cannot be said overall what would help consumers choose their method of birth control. Ways to inform women about family planning options should be tested in clinics. Trials should look at the choice of birth control method, along with how much consumers remember later.

Macnab A, Radzinski N, Budden H, Kasangaki A, Zavuga R, Gagnon F & Mbabali M. 2010. Brighter Smiles Africa: translation of a Canadian community-based health-promoting school program to Uganda. Education for Health; 23 (2)
http://www.educationforhealth.net/temp/EducHealth232241-3895435_104914.pdf

The project goal was to adapt a successful Canadian health-promoting school initiative to a Ugandan context through international partnership. Rural children face many health challenges worldwide; health professionals in training understand these better through community-based learning. Aboriginal leaders in a Canadian First-Nations community identified poor oral health as a child health issue with major long-term societal impact and intervened successfully with university partners through a school-based program called "Brighter Smiles". Makerere University, Kampala, Uganda (MUK) sought to implement this delivery model for both the benefit of communities and the dental students. MUK identified rural communities where hospitals could provide dental students with community based learning and recruited four local schools. A joint Ugandan and Canadian team of both trainees and faculty planned the program, obtained ethics consent and baseline data, initiated the Brighter Smiles intervention model (daily at-school tooth-brushing; in-class education), and recruited a cohort to receive additional bi-annual topical fluoride. Hurdles included: challenging international communication and planning due to inconsistent internet connections; discrepancies between Canadian and developing world concepts of research ethics and informed consent; complex dynamics for community engagement and steep learning curve for accurate data collection; an itinerant population at one school; and difficulties coordinating Canadian and Ugandan university schedules. Four health-promoting schools were established; teachers, children, and families were engaged in the initiative; community-based learning was adopted for the university students; quarterly team education/evaluation/service delivery visits to schools were initiated; oral health improved, and new knowledge and practices were evident; an effective international partnership was formed providing global health education, research and health care delivery.

Mellish M, Settergren S, Sapuwa H. 2015. Gender-based Violence in Malawi: A Literature Review to Inform the National Response. Washington, DC: Futures Group, Health Policy Project.
http://www.healthpolicyproject.com/pubs/436_FINALHPPMalawiGBVLiteratureReview.pdf

Among the many efforts of the Government of Malawi to prevent and respond to GBV, the Department of Gender Affairs from the Ministry of Gender, Children, Disability and Social Welfare currently is working to improve GBV data systems and data use. As a part of this

effort, the USAID-funded Health Policy Project has conducted a literature review to help to contribute to a better-informed national GBV response through identification and synthesis of existing studies and key government documents on gender-based violence in Malawi. The literature review was conducted primarily using online search methods and then followed-up with collection of documents not available online by country partners as needed. The literature was conducted to help answer how, in Malawi: GBV is defined and measured and see whether or not definitions are comparable throughout the literature; look at the prevalence rates of the various forms of GBV and how they compare across data sources; find out what information is available on GBV among specific populations or in specific settings; what factors are associated with GBV; what the impact of GBV is; what information is available on interventions and effectiveness; and what the key government documents on GBV are and how they address the issue.

Mock C, Quansah R, Krishnan R, Arreola-Risa C and Rivara F. 2004. Strengthening the prevention and care of injuries worldwide. *Lancet*; 363 (9427)

<http://www.sciencedirect.com/science/article/pii/S0140673604165100>

The global burden of injuries is enormous, but has often been overlooked in attempts to improve health. The authors review measures that would strengthen existing efforts to prevent and treat injuries worldwide. Scientifically-based efforts to understand risk factors for the occurrence of injury are needed and they must be translated into prevention programmes that are well designed and assessed. Areas for potential intervention include environmental modification, improved engineering features of motor vehicle and other products, and promotion of safe behaviours through social marketing, legislation, and law enforcement. Treatment efforts need to better define the most high-yield services and to promote these in the form of essential health services. To achieve these changes, there is a need to strengthen the capacity of national institutions to do research on injury control; to design and implement countermeasures that address injury risk factors and deficiencies in injury treatment; and to assess the effectiveness of such countermeasures. Although much work remains to be done in high-income countries, even greater attention is needed in less-developed countries, where injury rates are higher, few injury control activities have been undertaken, and where most of the world's population lives. In almost all areas, injury rates are especially high in the most vulnerable sections of the community, including those of low socioeconomic status. Injury control activities should, therefore, be undertaken in a context of attention to human rights and other broad social issues.

Mwaikambo L, Speizer I, Schurmann A, Morgan G & Fikree F. 2011. What Works in Family Planning Interventions: A Systematic Review. *Studies in Family Planning*; 42 (2)

<http://onlinelibrary.wiley.com/doi/10.1111/j.1728-4465.2011.00267.x/abstract>

This study presents findings from a systematic review of evaluations of family planning interventions published between 1995 and 2008. Studies that used an experimental or quasi-experimental design or used another approach to attribute program exposure to observed changes in fertility or family planning outcomes at the individual or population levels were included and ranked by strength of evidence. A total of 63 studies met the inclusion criteria. The findings from this review are summarized in tabular format by the type of intervention (classified as supply-side or demand-side). About two-thirds of the studies found were evaluations of programs focusing on demand generation. Findings from all programs revealed significant improvements in knowledge, attitudes, discussion, and intentions. Program impacts on use of contraceptives and use of family planning services were less consistently found, and fewer than half of the studies that measured fertility or pregnancy-related outcomes found an impact. Based on the review findings, the authors identify promising programmatic approaches and propose directions for future evaluation research of family planning interventions.

National AIDS Commission (NAC). 2003. National Behaviour Change Interventions Strategy for HIV/AIDS and Sexual Reproductive Health. NAC, Lilongwe, Malawi.
<https://www.k4health.org/sites/default/files/BCI%20Strategy.doc%2022%20July%202009.pdf>

This document is prepared as a national guideline for planning behaviour change interventions and activities on HIV/AIDS and Sexual Reproductive Health for the period 2001-2004.

Odero W, Khayesi M & Heda P. Road traffic injuries in Kenya: Magnitude, causes and status of intervention. Injury Control and Safety Promotion; 10 (1-2)
<http://www.tandfonline.com/doi/abs/10.1076/icsp.10.1.53.14103#.VuAjevmlSUk>

Road traffic crashes exert a huge burden on Kenya's economy and health care services. Current interventions are sporadic, uncoordinated and ineffective. This report offers a descriptive analysis of secondary data obtained from a variety of published literature and unpublished reports. Over three thousand people are killed annually on Kenyan roads. A fourfold increase in road fatalities has been experienced over the last 30 years. More than 75% of road traffic casualties are economically productive young adults. Pedestrians and passengers are the most vulnerable; they account for 80% of the deaths. Buses and matatus are the vehicles most frequently involved in fatal crashes. Characteristics of crashes vary considerably between urban and rural settings: pedestrians are more likely to be killed in urban areas, whereas passengers are the majority killed on intercity highways that transverse rural settings. Road safety interventions have not made any measurable impact in reducing the numbers, rates and consequences of road crashes. Despite the marked increase in road crashes in Kenya, little effort has been made to develop and implement effective interventions. Impediments to road traffic injury prevention and control include ineffective coordination, inadequate resources and qualified personnel, and limited capacity to implement and monitor interventions. There is need to improve the collection and availability of accurate data to help in recognising traffic injury as a priority public health problem, raising awareness of policymakers on existing effective countermeasures and mobilising resources for implementation. Establishment of an effective lead agency and development of stakeholder coalitions to address the problem are desirable.

Olukoga A. 2007. Trends in road traffic crashes, casualties and fatalities in Malawi. Tropical Doctor; 37 (1)
<http://tdo.sagepub.com/content/37/1/24.abstract>

There were 58,858 road traffic crashes, 39,111 casualties and 8,504 fatalities reported in Malawi between 1987 and 1995. This represented a 31% increase in the number of road traffic crashes, 42% increase in the number of casualties and 105% increase in the number of fatalities during the study period. The number of licensed vehicles in Malawi increased by 88%, from 43,762 to 82,218, and the number of road traffic crashes per 1000 vehicles decreased by 30% during the same period, from 118.9 to 82.9. The number of casualties per 1000 vehicles decreased by 30%, from 73.5 to 55.6, but the number of fatalities per 10,000 vehicles increased only slightly by about 12%, from 126.8 to 138.7. Despite a 34% increase in the population of Malawi from 8 million to 10.7 million between 1987 and 1995, only minimal changes were reported in both the number of road traffic crashes per 10,000 population and the casualties per 10,000 population. But the number of road traffic fatalities per 100,000 population increased by 55%, from 6.9 to 10.7.

ORIE. 2016a. Exclusive breastfeeding and early initiation: target groups and influential messages. ORIE Research Summary 12
http://www.heart-resources.org/wp-content/uploads/2016/02/ORIE_RSummary12_Breastfeeding.pdf

This briefing outlines the findings from operations research on exclusive breastfeeding (EBF) and early initiation. The study supports refinement of the infant and young child feeding (IYCF) strategy implemented by the Working to Improve Nutrition in Northern Nigeria (WINNN) programme.

ORIE. 2016b. Promoting women's attendance at ANC: target groups and motivating messages. ORIE Research Summary 11

http://www.heart-resources.org/wp-content/uploads/2016/02/ORIE_RSummary11_ANC.pdf

This report outlines the main findings of ORIE operations research on promoting women's use of antenatal care (ANC) services. The study supports refinement of the advocacy strategy for this, implemented by the Working to Improve Nutrition in Northern Nigeria (WINNN) programme.

Pengpida S & Peltzer K. 2012. Hygiene behaviour and health attitudes in African countries. Current Opinion in Psychiatry; 25 (2)

http://journals.lww.com/co-psychiatry/Abstract/2012/03000/Hygiene_behaviour_and_health_attitudes_in_African.14.aspx

In African countries, the biggest killers of young children are respiratory infections and diarrhoeal disease, and both are preventable via hand washing. Regular tooth brushing, at least twice a day, is one of the most effective methods for the control and prevention of dental caries and periodontal diseases. Both these oral diseases are infectious diseases (caused by bacteria) and thus can be controlled by proper oral hygiene. This review aims to provide updated research related to hygiene behaviours in African countries in three areas: children, community and healthcare setting. Suboptimal hygiene knowledge and behaviour (hand washing, hand washing with soap and oral hygiene) were found among African children, contributing to diarrhoeal diseases, helminth infections, dental caries, periodontal diseases and other communicable diseases. Several promising intervention studies have been done to increase hygiene behaviours among children and adolescents and may need to be scaled up. Community studies found faecal contamination on hands to be common and to be associated with various ill-health conditions. Several innovative interventions to improve hand hygiene behaviours in the community setting show promising results. Healthcare-associated infections due to lack of hand hygiene are common in Africa and interventions need to be developed and implemented.

Romão F, Nizamo H, Mapasse D, Rafico M, José J, Mataruca S, Efron M, Omondi L, Leifert T & Bicho J. 2003. Road traffic injuries in Mozambique. Injury Control and Safety Promotion; 10 (1-2)

<http://www.tandfonline.com/doi/abs/10.1076/icsp.10.1.63.14112>

Road traffic injuries affect the economy, health and quality of life of the people of Mozambique. Current road safety programmes are inadequate and inefficient given the magnitude of the problem. Data reported on road traffic crashes in the period 1990 to 2000 from the National Institute for Road Safety, the traffic police and the Central Hospital of Maputo were reviewed. The burden of road traffic injuries in Mozambique is rising, with at least three people killed daily. The age group most affected is 25-38 (39.35%), followed by 16-24 (20.79%). The main causes of crashes include reckless driving, drunken driving, roads with potholes, inadequate signs, lack of protection for pedestrians, and inadequate traffic law enforcement. However, the data are not adequate to reveal the true magnitude of the problem. Data collected by different sources are incomplete and not coordinated with other sources and databases. In urban areas, however, better response to crashes, treatment of the injured, reporting and data collection is attributable to a greater concentration of police and medical facilities. Road traffic safety programmes in Mozambique are inadequate and

inefficient, starting with the data collection system. Improvement of injury surveillance systems is needed to help make road traffic safety a national development agenda priority and for developing and implementing road safety policies. For road safety programmes to be effective, government must facilitate stakeholders' involvement, and the clear definition of government activities, civil society activities and public-private partnerships need to be established.

Ruel M, Menon P, Habicht JP, Loechl C, Bergeron G, Pelto G, Arimond M, Maluccio J, Michaud L and Hankebo B. 2008. Age-based preventive targeting of food assistance and behaviour change and communication for reduction of childhood undernutrition in Haiti: a cluster randomised trial. *Lancet*; 371 (9612)
<http://www.sciencedirect.com/science/article/pii/S0140673608602718>

Food-assisted maternal and child health and nutrition programmes usually target underweight children younger than 5 years of age. Previous evidence suggests that targeting nutrition interventions earlier in life, before children become undernourished, might be more effective for reduction of childhood undernutrition. In this study the authors used a cluster randomised trial to compare two World Vision programmes for maternal and child health and nutrition, which included a behaviour change and communication component: a preventive model, targeting all children aged 6–23 months; and a recuperative model, targeting underweight (weight-for-age Z score <-2) children aged 6–60 months. Both models also targeted pregnant and lactating women. Clusters of communities (n=20) were paired on access to services and other factors and were randomly assigned to each model. Using two cross-sectional surveys (at baseline and 3 years later), we tested differences in undernutrition in children aged 12–41 months (roughly 1500 children per survey). Analyses were by intention to treat, both by pair-wise community-level comparisons and by child-level analyses adjusting for the clustering effect and child age and sex. There were no differences between programme groups at baseline. At follow-up, stunting, underweight, and wasting (using WHO 2006 reference data) were 4–6 percentage points lower in preventive than in recuperative communities; and mean anthropometric indicators were higher by +0.14 Z scores (height for age; p=0.07), and +0.24 Z scores (weight for age and weight for height; p<0.0001). The effect was greater in children exposed to the preventive programme for the full span between 6 and 23 months of age than in children exposed for shorter durations during this period. The quality of implementation did not differ between the two programmes; nor did use of services for maternal and child health and nutrition. The preventive programme was more effective for the reduction of childhood undernutrition than the traditional recuperative model.

Rutenberg N & Watkins S. 1997. The buzz outside the clinics: conversations and contraception in Nyanza Province, Kenya. *Studies in Family Planning*; 28 (4)
http://www.jstor.org/stable/2137860?seq=1#page_scan_tab_contents

When women talk with each other about family planning outside the clinic, are they really only spreading myths and rumors? If nurses give good information about family planning, why do women go and talk with other women? Why would a woman instructed by a nurse at a workshop want to talk to the workshop cleaner as well? To answer these questions, findings are used from a household survey and in-depth interviews that examine the role of informal social interaction in influencing the use of contraceptives in rural Kenya. The women in the study area are found to be ambivalent about family planning, and they supplement providers' instructions with the experiences of women whose bodies and circumstances are similar to their own. Family planning programs could improve their effectiveness by viewing clients and providers not only as individuals but also as members of informal networks that are meaningful to them.

Shattuck D, Kerner B, Gilles K, Hartmann M, Ng'ombe T & Guest G. 2011. Encouraging Contraceptive Uptake by Motivating Men to Communicate About Family Planning: The Malawi Male Motivator Project. *American Journal of Public Health*; 101 (6)

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093271/pdf/1089.pdf>

In this paper, the authors examined the effect of a peer-delivered educational intervention, the Malawi Male Motivator intervention, on couples' contraceptive uptake. The intervention design was based on the information–motivation–behavioural skills (IMB) model. In 2008 400 men were recruited from Malawi's Mangochi province who reported not using any method of contraception. The authors randomised them into an intervention arm and a control arm, and administered surveys on contraceptive use at baseline and after the intervention. In-depth interviews were conducted with a subset of intervention participants. After the intervention, contraceptive use increased significantly within both arms ($P < .01$), and this increase was significantly greater in the intervention arm than it was in the control arm ($P < .01$). Quantitative and qualitative data indicated that increased ease and frequency of communication within couples were the only significant predictors of uptake ($P < .01$). The findings indicate that men facilitated contraceptive use for their partners. Although the IMB model does not fully explain the findings, the results show that the intervention's content and its training in communication skills are essential mechanisms for successfully enabling men to help couples use a contraceptive.

Smith K. 2004. Indoor air pollution in developing countries: recommendations for research. *Indoor Air*; 12

<http://onlinelibrary.wiley.com/doi/10.1034/j.1600-0668.2002.01137.x/epdf>

Available studies indicate that indoor air pollution (IAP) from household cooking and space heating apparently causes substantial ill-health in developing countries where the majority of households rely on solid fuels (coal or biomass as wood, crop residues, and dung), but there are many remaining uncertainties. To pin down impacts in order to effectively target interventions, research is particularly needed in three areas: (1) epidemiology: case–control studies for tuberculosis (TB) and cardiovascular disease in women and randomised intervention trials for childhood acute respiratory diseases and adverse pregnancy outcomes; (2) exposure assessment: techniques and equipment for inexpensive exposure assessment at large scale, including national level surveys; (3) interventions: engineering and dissemination approaches for improved stoves, fuels, ventilation, and behaviour that reliably and economically reduce exposure. There are also important potential synergisms between efforts to reduce green-house gas emissions and those to reduce health-damaging emissions from solid-fuel stoves. The substitution of biomass by coal being considered in some countries should be pursued with caution because of the known serious health effects of household coal use.

Stephenson R, Baschieri A, Clements S, Hennink M & Madise N. 2007. Contextual influences on modern contraceptive use in sub-Saharan Africa. *American Journal of Public Health*; 97 (7)

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1913073/>

This study examined the role of community-level factors in explaining geographic variations in modern contraceptive use in 6 African countries. Demographic and Health Survey and contextual data sources with multilevel modeling techniques were analysed to identify factors contributing to geographic variations in women's use of modern contraceptives. Significant associations between several community-level factors were found and reported use of modern contraceptive methods. We also identified several pathways of influence between the community and the individual. Aspects of a community's sociocultural and economic environment appear to influence a woman's use of modern contraceptive methods.

Talaat M, Afifi S, Dueger E, El-Ashry N, Marfin A, Kandeel A, et al. 2011. Effects of hand hygiene campaigns on incidence of laboratory-confirmed influenza and absenteeism in schoolchildren, Cairo, Egypt. *Emerging Infectious Diseases*; 17 (4)

<http://wwwnc.cdc.gov/eid/article/17/4/pdfs/10-1353.pdf>

To evaluate the effectiveness of an intensive hand hygiene campaign on reducing absenteeism caused by influenza-like illness (ILI), diarrhea, conjunctivitis, and laboratory-confirmed influenza, the authors conducted a randomised control trial in 60 elementary schools in Cairo, Egypt. Children in the intervention schools were required to wash hands twice each day, and health messages were provided through entertainment activities. Data were collected on student absenteeism and reasons for illness. School nurses collected nasal swabs from students with ILI, which were tested by using a qualitative diagnostic test for influenza A and B. Compared with results for the control group, in the intervention group, overall absences caused by ILI, diarrhea, conjunctivitis, and laboratory-confirmed influenza were reduced by 40%, 30%, 67%, and 50%, respectively ($p < 0.0001$ for each illness). An intensive hand hygiene campaign was effective in reducing absenteeism caused by these illnesses.

Usdin S, Scheepers E, Goldstein S & Japhet G. 2005. Achieving social change on gender-based violence: A report on the impact evaluation of Soul City's fourth series. *Social Science and Medicine*; 61

http://www.genderbias.net/docs/resources/full_text/domestic_violence/achieving_social_change_on_gender_based_violence.pdf

The Soul City Institute for Health and Development Communication—a South African multi-media health promotion project—together with the National Network on Violence Against Women, formulated an intervention to address domestic violence. Recognising that behavioural change interventions aimed solely at individuals have limited impact, the intervention was designed to impact at multiple mutually reinforcing levels; individual, community and socio-political environment. The intervention and its evaluation results are presented. Soul City successfully reached 86%, 25% and 65% of audiences through television, print booklets and radio, respectively. On an individual level there was a shift in knowledge around domestic violence including 41% of respondents hearing about the helpline. Attitude shifts were also associated with the intervention, with a 10% increase in respondents disagreeing that domestic violence was a private affair. There was also a 22% shift in perceptions of social norms on this issue. Qualitative data analysis suggests the intervention played a role in enhancing women's and communities' sense of efficacy, enabling women to make more effective decisions around their health and facilitating community action. The evaluation concluded that implementation of the Domestic Violence Act can largely be attributed to the intervention. While demonstrating actual reductions in levels of domestic violence was not possible, the evaluation shows a strong association between exposure to intervention components and a range of intermediary factors indicative of, and necessary to bring about social change. This paper reports on the evaluation, discusses its limitations and challenges as well as lessons learned regarding multi-level interventions on domestic violence.

Wakefield M, Loken B & Hornik R. 2010. Use of mass media campaigns to change health behaviour. *Lancet*; 376

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(10\)60809-4/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)60809-4/abstract)

Mass media campaigns are widely used to expose high proportions of large populations to messages through routine uses of existing media, such as television, radio, and newspapers. Exposure to such messages is, therefore, generally passive. Such campaigns are frequently competing with factors, such as pervasive product marketing, powerful social norms, and behaviours driven by addiction or habit. In this Review the outcomes of mass media campaigns are discussed in the context of various health-risk behaviours (eg, use of tobacco, alcohol, and other drugs, heart disease risk factors, sex-related behaviours, road safety, cancer screening and prevention, child survival, and organ or blood donation). It is concluded that mass media campaigns can produce positive changes or prevent negative changes in health-related behaviours across large populations. The authors assess what contributes to

these outcomes, such as concurrent availability of required services and products, availability of community-based programmes, and policies that support behaviour change. Finally, areas for improvement are proposed, such as investment in longer better-funded campaigns to achieve adequate population exposure to media messages.

Walden V, Mwangulube K & Makhumula-Nkhoma P. 1999. Measuring the impact of a behaviour change intervention for commercial sex workers and their potential clients in Malawi. Health Education Research; 14 (4)

<http://her.oxfordjournals.org/content/14/4/545.full.pdf+html>

A peer-education HIV/AIDS prevention programme for bar-based sex workers and their potential clients (long-distance truck drivers) in Malawi was evaluated for impact. A mixed method approach was used, the tools being structured questionnaires and focus group discussions. The results showed that in the active districts, the presence of sex worker peer educators led to an increase in condom use with paying partners (90.3 compared to 66.7 and 76.3% in the two other groups—non-active and average) and increased condom distribution. Condom use with regular non-paying partners of sex workers had, however, not increased since the baseline data. The truck driver peer educators were found to be generally inactive but companies where training had occurred were more likely to encourage and distribute condoms. The qualitative data gave a more in-depth view of several areas for concern: the reasons for the non-use of condoms with non-paying partners; acceptance of educators by their peers; and the sex workers' and truck drivers' criteria for condom use based neither on knowledge nor on their own risk awareness. These issues need to be explored further.

Wariki W, Ota E, Mori R, Koyanagi A, Hori N & Shibuya K. 2012. Behavioral interventions to reduce the transmission of HIV infection among sex workers and their clients in low- and middle-income countries. Cochrane Database of Systematic Reviews; 2

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005272.pub3/abstract>

The rates of HIV and sexually transmitted infection (STI) transmission continue to increase, particularly among sex workers and their clients in low- and middle-income countries. Prevention efforts directed towards these infections in this at-risk population may have had an effect in reducing the overall transmission of HIV/STIs in the general population. Several successful behavioural interventions have been reported including interventions to reduce HIV/STI incidence and prevalence, change behaviour, promote condom use, improve condom availability, and increase sexual health knowledge. The review found seven individual randomised controlled trials (RCTs), two cluster-RCTs and four quasi-RCTs involving 8,698 participants examining a variety of behavioural interventions to evaluate whether they reduced HIV/STIs rates or resulted in changed behaviour among sex workers and their clients. Results showed that the interventions were effective in HIV/STI prevention, including reducing the incidence and prevalence of HIV and STIs. Furthermore, there were some differences in self-reported behaviour including increased condom use and a reduction in the risk of drug use. However, these trials were small and generally had few participants. As a result, evidence for the effectiveness of social cognitive theory and promoting condom use in reducing HIV/STI incidence compared to other behavioural interventions was limited, because no RCTs examined the effects of these interventions on HIV prevalence or on sex workers other than female sex workers. In future research and program agendas therefore it is important to assess other potentially more potent behavioural change strategies.

Wood S, Foster J & Kols A. 2012. Understanding why women adopt and sustain home water treatment: Insights from the Malawi antenatal care program. Social Science & Medicine; 75 (4)

<http://www.sciencedirect.com/science/article/pii/S0277953611005880>

In many settings in Africa, social marketing has proven more successful in generating brand recognition for chlorine water treatment products than in promoting their use. To promote household use of one such product in Malawi, WaterGuard, the Ministry of Health (MOH) and Population Services International (PSI) distributed free hygiene kits that included WaterGuard to pregnant women attending antenatal clinics in 2007. Follow-up surveys documented a sustained increase in WaterGuard use three years after the initial intervention. In 2010, PATH (www.path.org) conducted qualitative research on the factors motivating women to adopt, sustain, or discontinue use. To provide context, interviews were also conducted with their friends, relatives, and husbands. Interviews revealed that sustained use of WaterGuard does not necessarily imply consistent use. Most respondents reported switching back and forth between WaterGuard and stock chlorine distributed for free by the government, and many treated water seasonally rather than year-round. Qualitative findings suggest that two program strategies strongly influenced women's decisions to adopt, purchase, and continue using WaterGuard. First, positive, ongoing contacts with health care workers, especially during home visits, raised awareness of the need to treat water, encouraged trial use, and supported continuing use. Second, an extended free trial of the product overcame initial cost barriers and allowed women and their families to experience the health benefits of WaterGuard, appreciate its value and relevance to their lives, and get used to its taste. Social support—from like-minded relatives, friends, neighbours, health care workers, husbands, and children—was also a critical factor that promoted consistent, ongoing use of WaterGuard. The findings confirm the importance of interpersonal communication in prompting adoption of household water treatment and suggest that consumers assess the perceived value of a product, not simply its cost. Further research is planned to investigate questions raised about patterns of ongoing use.

11. Additional Information

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