

REVIEW ARTICLE

Achieving Behaviour Change in COVID 19 Pandemic: Lessons Learnt From Cancer Prevention and Antibiotic Stewardship Programs Based on Social Cognition Framework

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ABSTRACT

In covid 19 pandemic, human behavior had a significant role. This is true for personal protection and in the public health interest. Changing behavior related to this pandemic is a challenge faced by many public health authority, but several prevention program were already trying to achieve behavior change. These include cancer prevention program and antibiotic stewardship. It is possible to learn lessons from their success and failure, to inform us what is the most effective way in changing covid 19 pandemic related behavior. We conducted literature search and review of cancer prevention program and antibiotic stewardship behavior change. Consistent messages, along with relevant reasons and supervision will increase the probability of successful behavior change. The change in environment, facilitating targeted behavior and reducing barrier will also improve the adoption of new behavior. Involving peer groups, as peer control is important also had a positive effect on behaviour change.

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INTRODUCTION

Covid 19 pandemic had affected almost all countries worldwide. Until the end of August 2020, more than 24 million people were infected and more than 800.000 died (1). In less than 8 months from the first reported case in Wuhan, the virus had travelled and reaches almost all countries. 3 identifiable factors contributed to this spread: 1) the SARS-CoV-2 infectiousness, mode of transmission and ability to survive for an extended period 2) The mobility and contact of people around the world and 3) there are no current effective prevention and treatment. We have learnt, in a stepwise fashion, that the virus is transmitted via droplets or aerosol and indirect contact (2). It is also possible that the indirect contact route includes transmission via wastewaters and faecal-oral route, although the later both route are still debatable (3-5). It is also has been shown that

the virus can bind to enterocytes and being shedding in faeces even after no identified viral from the respiratory tract (6-8). Partly due to uncertain mode and route of transmission, some countries are not making effective public prevention policies, which in turn contribute to the spreading of the virus.

We have learnt also that the burden of mobility and contacts between people are correlated with the number of new infections. As countries incited lockdowns, the number of new cases plummeted, and it rises again after the relaxation of lockdowns (9-11). Analysis from phone mobility data also showed the same correlation, that reduced mobility will reduce the virus transmission (9, 12). The limitation of movement and lockdown policies, however, had a huge impact on the economic performance of many countries (13). In this context, a general and nationwide lockdown may not be the optimal policy for the overall welfare of the public, including from public health aspects. The study of social determinants of health had clearly shown that reduced economic level will harm the overall healthstatus (14).

From the public health perspective on the prevention of disease, there are five levels of preventive measures includes 1) Health promotion; 2) Specific protection; 3) Early diagnosis and Prompt Treatment; 4) Disability Limitation and; 5) Rehabilitation. Level 1 is health promotion, for reducing the transmission of the disease by modifying knowledge, attitude and behaviours specifically related to reduce the risk of transmission.

Specific protections are made to prevent healthy but susceptible population being infected. This can be achieved by vaccination. Unfortunately, up to now, there is no vaccine available for the covid 19 with many are undergoing various stages of clinical trials (15). Both level 1 and 2 are considered primary preventions.

Two currently running health promotion which involves behaviour modification are cancer prevention and antibiotic stewardship program. We will discuss the current state of these two programs and learn from them how to design and implement better covid-19 behaviour change for primary prevention. We discussed these approaches by using social cognition framework.

Cancer Prevention Programs

Cancers are multifactorial disease, in which genetics and environmental factors are intertwined. However, each type of cancer, even each subtype may be influenced differently by those factors. Some cancer, such as Lynch syndrome of colorectal cancer or BRCA positive breast cancers, are predominantly genetics, while lung cancer is influenced more by an environmental factor. Cancer prevention program, therefore, is focused on modifiable behaviour and environmental factors. We will focus on three types of cancer on their prevention program, which are skin, breast and colorectal cancer.

Skin cancer prevention is mainly focused on the limitation of exposure to ultraviolet light, either by reducing sunlight exposure (sun safety behaviour) or by using protective agents such as sunblock (16). Environmental factors component intervention includes: procurement of shaded area, free sunscreen either provided on the site or given directly to individuals. Cognitive factors such changes on knowledge are measured. Based on the systematic review by Thonen et al (2020), changes in the environmental factors are correlated with the changes of behaviours toward prevention but did not for the provision of free sunscreen (17). This analysis is strongly in favor of environmental modification, rather than individual efforts. However, for children population, Glantz et al showed that there were no significant differences in sun-safe behaviour were

found between groups that were educated and the group that was educated plus environment changes (18). It is also interesting that counselling or tailored mailing had an only small effect on behaviour change in UV protection behaviour (19).

Breast cancer prevention programs are more complicated since modifiable factors that are attributed to a higher risk for breast cancer are multiple. This includes among others are the use of hormonal therapy, ionizing radiation, obesity, alcohol, and lack of exercise (20, 21). Two interventions are also general public health advice that increases exercise and reducing alcohol consumption. We will focus on efforts to increase exercise, which is also beneficial for primary prevention of various other cancer such as prostate and colorectal cancer (21). A study also showed that exercise was beneficial in reducing cardiac-related toxicity induced by chemotherapy for breast cancer treatment (22). It is of note that positive cognitive and affective experience during exercise, increase the possibility of performing the exercise (23), which based on social cognitive theory is a part of self-regulation. A randomized clinical trial COSTRIDE however, showed that on sedentary individual the only moderating factor of exercise promotion is genetic (24). On the elderly with cancer, intervention by monitored regiments, in which there are several “checkpoints” meetings have been shown to increase physical activity (25). A qualitative study showed that having a negative attitude toward exercise, difficult access to exercise including weather, side effects of exercise and limited time are barriers to performing an exercise, as perceived by health care providers (26).

Modifiable factors in colon cancer include cessation of smoking (27), in which it's prevention program is discussed. Smoking is correlated with many cancers, but as a public health problem, social, psychological, and economic considerations are complicating its prevention. A group approach and a specialist stop smoking counsellor were better than individual approach and general counsellor (28), which underline the social environmental factor, especially learning by observing other people (29). Furthermore, a tailored program performed by specialists is more effective in disadvantaged groups (30), as well as community-based participatory research(31). Both showed that an intensive counselling and participatory approach had a better chance of changing behaviour. Other study showed that in 1 year only in-person counselling and pharmacotherapy still affected smoking cessation on lung cancer patients(32). However, in cancer patients, specific smoking cessation program did not differ in effectiveness compared to usual care (33,

34), which implies that behaviour change related to addictive substance for secondary prevention are difficult and have different change variable.

Antibiotic Stewardship Programs

Antibiotic use is related to provider, health facilities and consumers (patients). For this paper, we will examine the evidence for consumer (patients) behaviour changes concerning the prescription of antibiotics. A systematic review of interventions aimed at children, university students, parents and the general public in changes of behaviour toward the desired direction (i.e., good antibiotics stewardship) showed that different target groups responded differently (35). Public campaign commonly used includes mass media, school-based and printed materials (35). Interventions targeting school children and parents showed consistently positive results, but for the general public, it is less consistent (35). Furthermore, a study showed that much general public uses internet search for antibiotic information (36), in which consistent information may form a knowledge base for the user. A human engineering approach model emphasizes the environmental change to promote behaviour change in antibiotic stewardship, and the external factor includes a media campaign (37). A study done in rural India showed that limited access to medical professionals was correlated with improper antibiotic use, due to self-prescribing (38).

DISCUSSION

Since there is not yet an available vaccine for covid-19, the best possible primary prevention is behaviour modification. Based on WHO recommendations, these are the prevention behaviours that must be done, i.e., using a mask, physical distancing (more than 1 m), hand washing and avoiding crowded and/or confined space. In Indonesia, these behaviour are not naturally done, and therefore needed to be endorsed. Based on the social cognitive theory, observational learning is governed by 4 steps, namely: attention, retention, reproduction, and motivation (29). Therefore, any public campaign must perform all the steps. Attention exists because of extensive media coverage. However, the longer the duration of the pandemic, the public will be less interested in the subject (desensitization), unless there are extraordinary events. It is crucial to time the attention-getting of prevention at the right moment. The other aspects of the information on the covid-19 in Indonesia are inconsistent messages from different authoritative figures, which may hinder the second step, retention. Mixed contradictory messages are not supportive of changing behaviour. Therefore, the public is confused which behaviour to reproduce, and it will delay or even stop the adoption of the desired change. Public figures and authority are “specialists” in the sense that they are providing advice and are followed by many

people. If each “specialist” is guiding the public with consistent and proper messages, such as in cancer prevention programs, the behaviour change is more likely.

Based on the exercise promotion, behaviour changes that had positive feedback will be more likely to be sustained. This poses problems in many of the transmission prevention recommendations, as culturally and psychologically it may be giving negative feedbacks when performed. For example, physical distancing created challenges in a community which have crowded environment like in urban environment or traditionally market. On the contrary, it may be natural to promote in villages where spaces are more vacant. If the negative consequences cannot be eliminated, prevention program should therefore be aimed at reducing the cost. For example, if using a mask is expensive economically, then free masks should be provided, along with cues to using it in as many public places as possible. Rather than focusing on penalties of not using a mask, it is better to make using the mask easier. It is also suggested by findings on cancer prevention that “checkpoints” and accountable partners are supportive in behaviour modification, and therefore the intervention should focus on families/groups rather than individuals. Of course, the number of people in the group and their relation should be small enough to be held accountable, or social loafing phenomenon may occur (39).

Learning from antibiotic stewardship program, targeting behaviour change in a specific population, such as children and parents may be more effective than in general public. Consideration of human engineering factors such as social pressure, extensive consistent media exposure and involvement of specialist in the campaign rather than relying on “double duty” of health professionals can make a better impact (37, 38). ASP in principle is to improve the rational prescription towards suppressing the problem of antimicrobial resistance (AMR). And there are two factors in increasing the AMR, namely: 1) high burden and irrational antibiotic use and 2) highly resistant bacteria spread among persons. The hand hygiene is the most important in suppressing the bacterial spread, that very hard for the Indonesian healthcare worker. But during the covid-19 era, the compliance of hand washing and/or hand scrubbing is highly reached in daily working. It due to the internal pressure of healthcare worker to prevent covid-19 transmission.

CONCLUSION

As we have discussed above, many challenges hinder the required behaviour changes for cancer prevention and antibiotic stewardship. We understand that

on individual and society level, although almost everyone agreed to primary prevention, many factors prevent or did not support people to change their behaviour.

Since the covid-19 pandemic, there is higher compliance of health care workers to performed standard precautions, mainly due to the fear and higher risk of being infected; we expect that this momentum is beneficial to the efforts in educating the public on all three primary prevention efforts: cancer prevention, antibiotic stewardship and covid 19 transmission. It may raise the overall awareness of what is important and should be done to address these three issues, especially for the public.

Covid-19 primary prevention program can benefit from lessons learned on other establish primary prevention program on cancer and antibiotic stewardship. We had shown that not all factors are equally important in behaviour change, based on social cognitive theory.

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