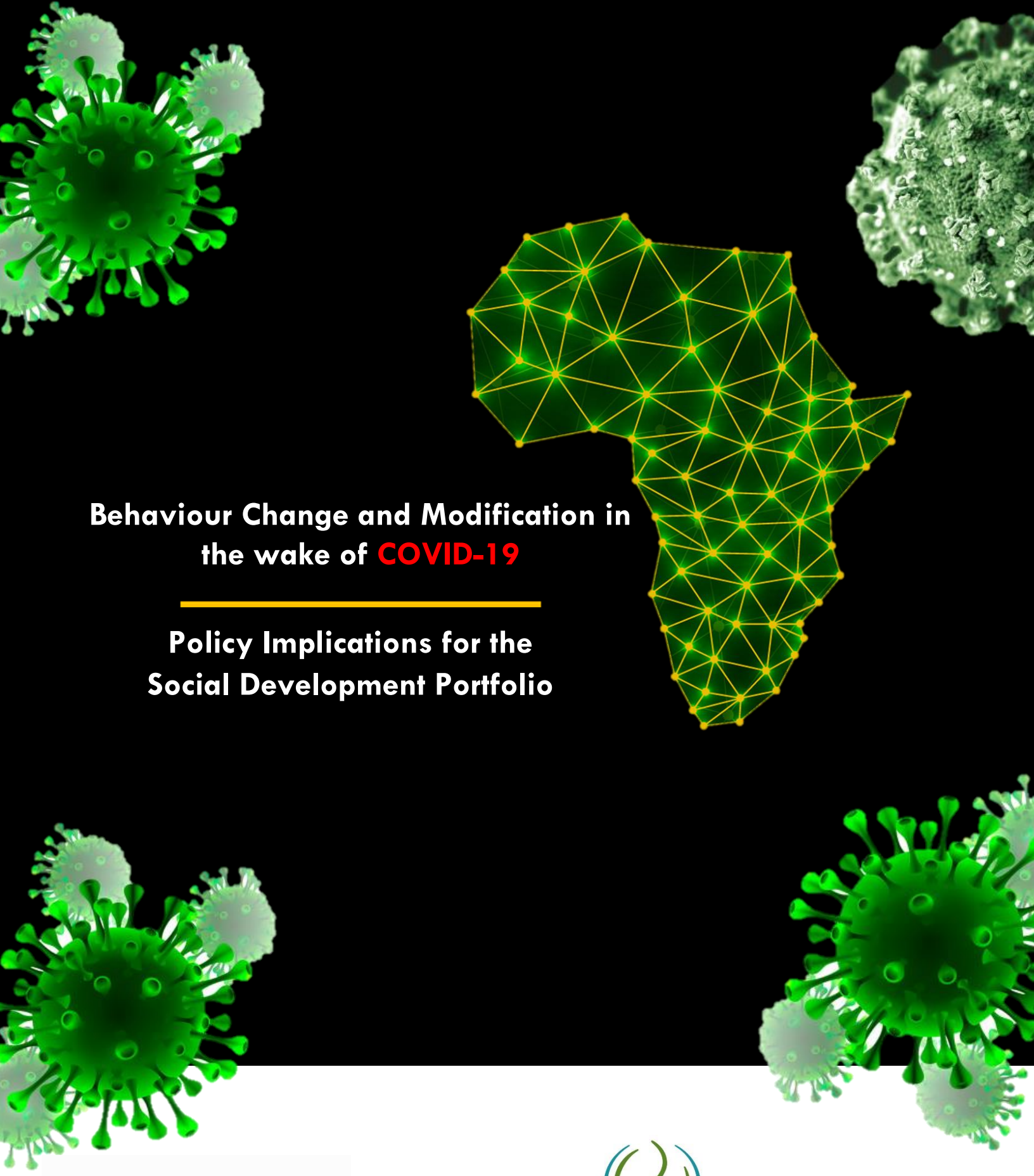

Behaviour Change and Modification in the wake of COVID-19

Policy Implications for the Social Development Portfolio

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Behaviour change and modification in the wake of COVID-19 – Policy implications for the Social Development Portfolio Strategies

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1. Introduction

The pneumonia-like unknown upper respiratory infection reported by China identified in Wuhan, China, first reported to the World Health Organisation (WHO) on the 31st December 2019. After investigations by WHO on this new infection in China, WHO declared an outbreak a public health emergency of international concern on the 30th January 2020. The outbreak was then named as COVID-19 by the World Health organisation on the 11th February 2020.[1] This had become a global public health problem, wrapped itself around economic, social and development catastrophe for all nations of the globe. It has not spared any part of the world population. It has left a trail of high morbidity and mortality over a very short time leaving the glob population at a panic mode. This is because this virus has no therapeutics nor a vaccine to fight it. Over this short period, whilst health experts are trying to find a cure and or vaccine, which they both take time to move them from an experiment, to human use safely and proved efficacy, the only option is the prevention of spread amongst humans.

reported to be in critical condition.[2] The response has triggered a cocktail of responses In a short time, about seven months since COVID-19 case was confirmed has, globally, infected over 16.6 million people with over 5.7 million active cases and over 656,000 deaths. Over 10.2 million cases, during the same period, have been reported as recovered and 66,580 were around the globe ranging from public health and health systems, social and human behaviour, economic and developmental. All these responses are geared towards mitigating the impact of the virus on human life. It is too early to know if these will slow down the transmission, human mortality and suffering, let alone the economic devastation.

In South Africa, the first case of COVID-19 was confirmed on 5 March 2020,[3] the national government quickly took steps to minimize the spread and impact of the virus. On 18 March 2020, the Minister of Cooperative Governance and Traditional Affairs issued regulations to prevent an escalation of the COVID-19 pandemic in South Africa. On 23 March 2020, 9 days after detection of the first locally transmitted case,[4] President Cyril Ramaphosa announced a nationwide 21-day lockdown. On 9 April 2020, the President extended the lockdown for a further two weeks. South Africa has taken lockdown restrictions are among the most extreme globally[5]. On the 21st April 2020, the President announced a comprehensive package to mitigate the impact of the virus on the population of South Africa. On the 23rd April 2020, the President announced a risk-averse plan for easing the lockdown with 5 levels and specific requirements and adherence to a state of disaster lockdown to relaxed.

South Africa, over the period, had adopted three-pronged response to this pandemic, public health and health systems, social protection, and economic stabilisation and recovery. The aim is to minimise the health, social and economic impact on the

population, especially the poor and vulnerable. These have to work simultaneously for maximum impact. Guidelines have been developed and implemented for preventions and containment of this pandemic. South Africa has quickly taken up these prevention and containment guidelines and swiftly implemented them without any experience of proven positive outcomes against this new virus.

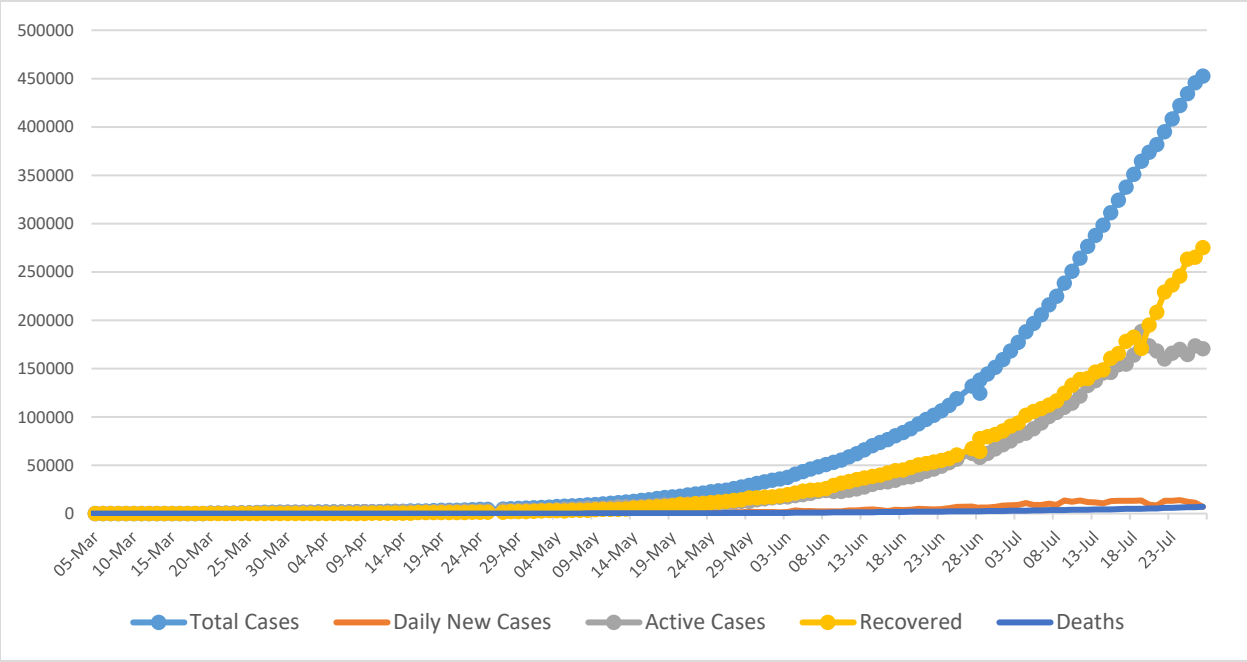

Figure 1 South Africa COVID 19 Cases 5 March – 27 July 2020 (NDOH/Worldbarometer)

The South African response to COVID-19 managed to delay the surge of infection. However, the containment measures were never meant to stop pandemic but to delay and slow the transmission. Four months after the first case was confirmed, as of the 27th July 2020, South Africa has reported 452,529 cases, with 170,537 reported as active cases and 274,925 recoveries, 7,067 COVID-19 related deaths and over 2.8 million COVID-19 tests conducted. The number of new cases in South Africa is exponential growth, especially in the provinces with high population density. COVID-19 related deaths are also increasing, however, the South African COVID-19 seem to have lower mortality compared to countries with similar numbers of COVID cases. Public health specialist and scientist are suggesting that South Africa has not reached its pandemic. This means that the country will still exponential increase in new cases and significant increases in mortality if no stringent measures are not put in place.

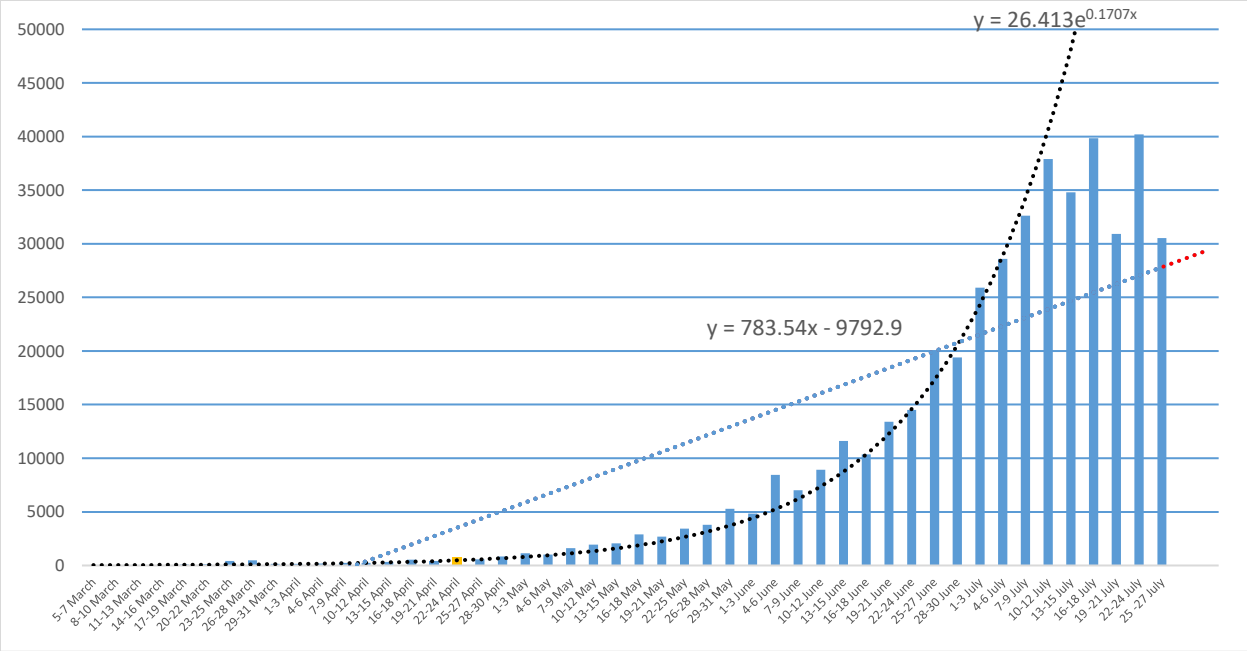

Figure 2 COVID 19 Trend for New Cases in South Africa (NDOH/Worldbarometer)

The number of active cases remains high due to surge in the daily reported COVID cases and the lag time between infection and fully recovery (testing negative). The only way to keep numbers of active cases is by reducing the daily numbers of new cases significantly, thus clearing those who are already positive within the lag period. The number of recoveries has kept just above the number of active cases since June 2020, whilst the number of deaths remains significantly lower, even when compared to epidemics of similar scale globally. However, the South African epidemic has seen a surge in the number of deaths since the beginning of June 2020. It is important to keep the number of deaths low to minimise the impact of CIVID-19 on human life, this requires an agile and responsive health system, including testing and hospitalisation of severe cases.

Preventive measures and early detection of the infected people are the mainstays of COVID-19 control and containment. Practising appropriate hands hygiene – the washing of hands with soap or using sanitizers, wearing of face masks or shields in crowded spaces, social distancing, avoiding shaking of hands, hugging etc, covering mouth when coughing and sneezing are practical measures that reduce the chance of passing the virus amongst people. Testing is a tool useful for early detection. South Africa has tested over 2.3 million people since the start of the pandemic, this allows the country to identify cases early, isolate and treat those that progress to server illness. Quarantine and isolation of positive cases is an effective tool to reduce the spread of this virus. The other crucial tool in the containment strategy is information, education and communication campaigns. Social marketing programmes can benefit countries in changing the

behaviour of the population and adherence to containment measures and regulations for COVID-19.

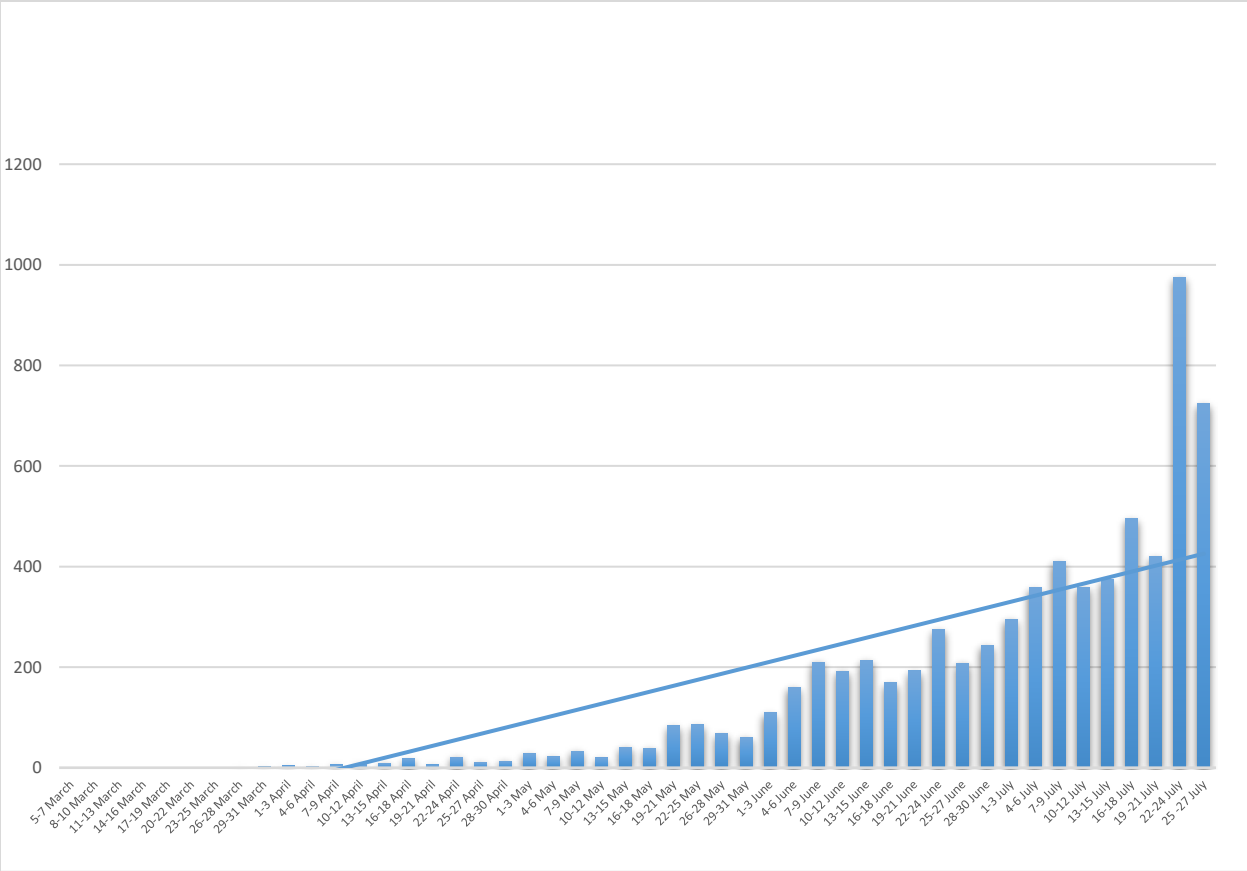

Figure 3 COVID-19 Deaths 3 Days cumulative (Data Sources: NDOH/Worldbarometer)

Despite rapid and decisive actions from the Government of South Africa, COVID-19 still poses a high threat to the country. This is due to the large high-risk population such as the high prevalence of HIV, tuberculosis, and other previous conditions.[6,7], high population density in informal settlements,[8] and the low-capacity of the healthcare system to cope with many patients.[9] COVID-19 also poses a threat to South Africa's economic stability. While fully opening economic activities is likely to exacerbate disease transmission, lockdown and social distancing have unavoidable economic and financial repercussions, disproportionately impacting low-income and vulnerable populations.[10] South Africa has a large population of informal workers and business-owners, about 2.5 million workers, whose livelihood and economic stability is under threat.[11]

The Social Development Portfolio (SDP) has to deal with the social and development aspects of the pandemic challenges. The burden is high and unsustainable unless a therapeutic or vaccine is found soon. The demand on the social security systems, gender-based violence, feeding schemes and early childhood development programmes has

reached stressful proportions. The known approach to mitigate and reduce transmissions of the COVID-19 pandemic is behaviour change of the population, which entails hygiene, social distancing and mask-wearing. All these require a change in individual behaviour and practices, thus influencing how community act to prevent transmission and spread of the virus.

2. Background

The containment of COVID-19 relies on human behaviour. World-wide guidelines have been adopted by governments to manage the pandemic in the absence of treatment and or vaccines. The guidelines are primarily on human behaviour change. As South Africa starts to loosen lockdown restrictions, human behaviours, such as, maintaining social distance, wearing of a proper mask, washing hands, use of sanitiser and adherence to government guidelines becomes the driver of managing the pandemic. The World Health Organisation (WHO) states that one person can transfer the virus up to three persons. Therefore, government strategies and guidelines are reliant on human behaviours and this becomes recognised as an indispensable element in this pandemic.

The concept of social capital[12] [13] [14] brings social behaviours on developing safe survival methods during and post COVID-19 period by practising safe human behaviour methods of preventing transmission of the virus. There are many examples of social capital since it relates to human sociability to survive by changing human behaviours and working nature. Furthermore, social capital has three dimensions brought together, bridging, and linking. Studies on this concept have indicated it promotes social identities and confidence to survive during such pandemic by changing behaviours and helping strongly to communicate with stakeholders.[15] Such important observations were observed in previous crises as such as earthquakes, influenza, A/H1N1, Ebola, etc. These changes in human behaviours can be established through community-based social norms that relate to health habits (such as, hand-washing, physical distancing, and self-isolation), diffusion of health information, and cohesive social networks offering effective support. Thus, by applying the three dimensions of capital theory, it is more effective to overcome the Covid-19 crisis.

Behaviour change theories have been documented and explored by social and behavioural researchers for some time over the decades.[16][17][18] Behaviour change theories are useful in understanding why people act the way they do and why behaviours change. These theories are helpful to guide behaviour program design and help you focus on what or who to address in your program. These theories deal with a different set of factors to explain behavioural change and area of focus—the individual, their intention to change their behaviour or their surrounding environment. The theories provide an

appropriate design of behaviour change interventions and its socio-ecological approach in changing human behaviour.

There are also behaviour theories published in the literature that proposes moving away from the individual to focus on the behaviour itself, or relationships between behaviour, individuals and the social and physical environments in which they occur. These theories of innovation (such as diffusion of innovation, and disruptive innovation theories), focuses on behaviours themselves as agents of change. There other theories that come from sociological, anthropological, and geographical research described as social practice theory and socio-technical systems, has tended to focus on behaviour as an outcome of complex inter-relationships and shared social practice. These theories suggest that individuals perform or reproduce behaviours, which are a product of relationships between people, their environment, and the technology that surrounds them. In this sense, objects and environments become active in the production of behaviour. These theories draw heavily on social theory. Literature emphasis that analysis of behaviour is profoundly political[19] and research often reflects the structures and complexities of the behaviour it seeks to investigate[20]. Certain formulations of behaviour are easier to integrate with the currently dominant paradigms of policy and policy-making.

There are several theories about changing people's behaviour. Behaviour change theories need to be applied in different settings to test for specific behaviour changes. The theory of planned behaviour is one of the most widely cited and applied behaviour theories.[21] [22] [23] This theory evolved from the theory of reasoned action that posited intention to act as the best predictor of behaviour.[24] The intention is itself an outcome of the combination of attitudes towards a behaviour.

The social practice theory is also applied to understand human behaviour. This theory is something of an umbrella approach under which various aspects of the theory are pursued. The central insight of this theory is the recognition that human 'practices' (ways of doing, 'routinized behaviour', habits) are themselves arrangements of various inter-connected 'elements', such as physical and mental activities, norms, meanings, technology use, knowledge, which form peoples actions or 'behaviour' as part of their everyday lives.[25] The approach particularly emphasises the material contexts (also 'socio-technical infrastructures') within which practices occur, drawing attention to their impact upon behaviour (the production and reproduction of practices). The notion that non-human 'actors' have a role to play in causing certain outcomes or 'behaviour' draws on the actor-network theory[26].

The diffusion of innovation theory places its emphasis on innovation as an agent of behaviour change, rather than focusing entirely on individual decision-makers or social structures. It recognises the perceived attributes of an innovation that determine its rate

of adoption to a greater extent than the characteristics of the adopters. The theory has been widely applied to issues including marketing, development and health.[27] Its main pillars for behaviour change are defined as innovation, communication channels, time and social systems.[28] According to this theory, the behaviour will change more rapidly if innovations are perceived as being better than previous options and consistent with the existing values, experiences and needs of potential adopters, if they are easy to understand, testable via limited trials and their results are visible.

The social and behaviour change communication model asserts that you have to start by understanding why people act the way they do and why behaviours change. The theories of this model can be helpful to guide a comprehensive social and behaviour change program design and help in segmenting the target audiences, approaches and messages on what or who to address in the program. Each theory or model has a different set of factors to explain behavioural change and area of focus—the individual, their intention to change their behaviour or their surrounding environment.

The health belief model has been widely used when promoting individual preventive behaviours, such as condom use or getting vaccinations. It focuses on the beliefs and perceptions of the individual, so it is appropriate to change behaviours that are not heavily influenced by society and social norms. It tells us the importance of highlighting both the negative consequences of the current behaviour and the positive consequences of alternative, suggested behaviour. This model highlights how programs need to consider individual beliefs about the problem being addressed and the costs and barriers associated with changing behaviour. The Health Belief Model is based on the understanding that a person is likely to change behaviour if they perceive susceptibility, benefits, barriers, actions to be taken, confidence in taking the action.

The literature suggests, there are stages that people go through when changing a behaviour change. It assumes that individuals have different degrees of motivation and readiness to change, which determine their current stage of change. According to literature, different stages of change require different information needs and approaches to try to move people in different stages. Although people may predictably move through these stages, an individual can drop back or jump over stages. The stages are defined as Pre-contemplation, there is no intention to change behaviour in the future. Contemplation, an individual is aware that the problem exists and is seriously thinking about overcoming it but has not yet committed to taking action**.** Preparation**,** an individual intends to take action immediately. Action, an individual begins performing the behaviour. Maintenance, an individual continues the behaviour and works to maintain it. Some professionals have added advocacy as a tool to maintain the new behaviour adopted by the individual, thus the individual maintains the behaviour and promote the benefits of the behaviour to friends and encouraging them to try it, too.

There are other approaches for change behaviour interventions, one of them is the 'group-based behaviour-change interventions' (GB-BCIs) these are interventions targeting groups of people. These behavioural interventions can be based on educational and/or psychological change processes and techniques to facilitate changes in people's lifestyle-related behaviour. Many examples are available in the literature on these type of change behaviour intervention.[29] Scientific reporting of group-based behaviour-change interventions may be especially challenging because many features of group context, composition and leadership influence how group participation impacts on individual behaviour.[30] Research into group dynamics[31] [32]has identified a range of features that determine the effects of group participation on individual change. For example, group composition (i.e., who the group members are) can influence social identification[33], upward and downwards social comparisons[34], and group cohesion[35]. Activities engaged in by group members can facilitate particular types of learning including, for example, the use of social modelling[36]. Group leaders', or facilitators', background and facilitation style can shape interactions between members and, consequently, the personal impact of group participation[37]. These and many other characteristics, such as the time spent in groups and frequency of group meetings, that distinguish between different group-based behaviour change need to be described to allow a better understanding of change processes and the 'active ingredients' in groups and to allow more accurate replication.

Timely and effective interventions are required to change people behaviour and lifestyles because if bad behaviour and lifestyles continued for a prolonged period, they become risk factors for changing people behaviour and control or mitigate outcomes of bad human behaviour. Education through change behaviour information, education and information through mass media platforms is an important factor in bringing out the behavioural change which may get missed in community-based interventions due to their limited reach. Mass media behaviour change interventions have been used in many countries, however, the nature of interventions and their effectiveness differs. For change behaviour interventions to be measured for their effectiveness, there is a need to have a well-defined mass media programme, with strategies, target audiences, messages, and platforms to deliver the programme. It is also important to design protocols for a systematic review of the programme to evaluate the effectiveness of its effectiveness to reduce the risk of acquiring diseases which can be prevented by the general population.

Behaviour change interventions must be designed to allow exact replication of changes in behaviour for different needs in a different context. Interventions may be developed in stages or may involve adaptation of existing programmes.[38] In these cases, detailed intervention descriptions may be adapted from existing change behaviour published protocols, reports of intervention development or evaluation reports of other behaviour. Such publications and references provide some blueprint for designing and implementing

behaviour change interventions that have beneficial outcomes for the public. However, interventions content, target audiences, messages may differ, these variations must be specified if the (potentially effective) intervention is to be replicated with fidelity. Failure to describe such variations could mean that replications test intervention variants that are importantly different in their effects on target behaviours.

The implementation of behaviour change programmes and interventions require systematic design and monitoring systems.[39] These allow programmes to be evaluated for their outcomes and impact. Most of these programmes are implemented as campaigns, as such, their efficacy is important. Evaluations conducted on behaviour change campaigns were found to have a moderate and stronger impact. These evaluations were conducted on tuberculosis testing or vasectomy, episodic behaviours such as vaccinations, use of oral rehydration therapy, and early initiation of breastfeeding, and habitual behaviours such as nightly bed net use, handwashing, consumption of iron and foods rich in vitamin A, and use of modern contraceptives in developing countries. The studies concluded that interventions with mass media campaigns could positively impact a wide range of child survival health behaviours in low- and middle-income countries around the world. It was also observed that there is evidence that mass media interventions can be effective for addressing a wide range of health behaviours related to child survival. There is further evidence that several approaches can be effective in changing behaviour.

The control and containment of COVID-19 infection are largely dependent on human behaviour. The risk factors for the spread of the virus are how human being socialise with each other, their perception of general hygiene practices such as the washing of hands using soap, the distance they keep amongst themselves, and avoiding crowded spaces. These are learned behaviours over time and they become a norm for human beings. The measures required to contain infections are violating perceived norms for the general population. Studies have shown that people can learn new behaviours, provided certain factors are taken into account the promote change in an individual or group behaviour. Not only the factors influence change in behaviour but also the approaches used to address these factors are critical to change people behaviours and practices.

3. Objectives

The objective of the research is to review a range of human behaviour change models and programmes that can inform policy and programme designs for the social development portfolio in response to COVID-19 pandemic. The research reviewed change behaviour different models, theories, frameworks and strategies in the context of preventions of risk behaviours in promoting healthy lifestyles. The literature review study

assessed the readily available information on behavioural change programmes with the aim of:

- Exploring and documenting behavioural change models, theories and Frameworks
- Exploring a different set of factors to explain behavioural change (Individual, Social Environment)
- Suggesting approaches to mitigate and reduce the transmission of COVID-19 through behavioural Change of the population
- Recommending effective behaviour change interventions in dealing with the COVID-19 pandemic.

4. Methodology

The research used a systematic review of the literature containing evidence about the effects on human behaviour change programmes interventions on a range of issues that are influenced by human behaviour. The approach searched published and grey research and evaluation literature studies, programme design and theories on human behaviour change models publications across sectors. We reviewed models that can provide the basis for design a behaviour programme or interventions, reviewed processes used in these design models. The review included behaviour change programmes implemented across low, middle-income countries and the developed world.

The literature review included a range of mass media interventions used for health-related issues were reviewed to understand how the programme was designed, implemented and evaluated. The types of behaviour change programmes that were implemented, including specific human behaviour change aimed at responding to wanted behaviour change. The approach of the research was also aimed at assessing what has been done in different environments, what was achieved, what were the systematic processes followed by implementers and what are gaps that can be addressed. We also reviewed the attributes of a successful behaviour change programme. The research does not compare these interventions but seeks lessons from best interventions can be designed, resourced and implemented in settings similar to South Africa.

5. Behaviour Change Models, Theories and Frameworks

Behavioural change is fast becoming the ‘holy grail’ of sustainable development policy. Nevertheless, understanding how, why and where behaviours change is an essential pre-requisite for making progress here. Information campaigns have been widely used for achieving public interest goals. However, they are known to be less effective than other

forms of learning. Research suggests that learning by trial and error, observing how others behave and modelling our behaviour on what we see around us provide more effective and more promising avenues for changing behaviours than information and awareness campaigns[40].

Within government, 'behaviour change' (which is often applied through social marketing campaigns) tends to be dominated by social psychological and (behavioural) economics thinking. Behavioural models are designed to help us better understand behaviour. Those used within government tend to be social-psychological models that explain behaviour by highlighting the underlying factors influencing the individual or group. Behavioural economics combines insights from economics and psychology to generate principles that show how people's decision-making can be less 'rational'[41]. Most government communications seek to encourage or enable people to act in one or more of the following ways:

- to start or adopt a new behaviour;
- to stop doing something damaging; •
- to prevent the adoption of negative or harmful behaviour; and/or
- to change or modify an existing behaviour.

In each case, the aim is to get people to behave in a certain way. Insights from social psychological theory and behavioural economics, both of which provide us with a deeper understanding of human behaviour, are therefore relevant to all government communications. There is a wide range of personal, social, and environmental factors that influence behaviour. Most can be assigned to three levels[42]:

- *Personal or individual*: beliefs, knowledge, attitudes, skills, genetics
- *Social:* interaction with other people including friends, family and the community
- *Environmental:* the area in which individual lives, e.g. school, workplace, local shops and facilities, and broader factors including the economy (such as prices) and technology.

Many different social psychological models seek to explain human behaviours. The factors in most of them can be split into three levels:

Level 1- Personal ('micro') factors which are intrinsic to the individual, such as their level of knowledge or their belief in their ability to change their behaviour and their habits.

Level 2- Social ('meso') factors which are concerned with how individuals relate to each other and the influence of other people on their behaviour.

Level 3 - Environmental factors over which individuals have little control. These include both local ('exo') environmental factors, for example, the area in which an

individual lives and local shops and facilities; and wider ('macro') environmental factors such as the economy or technology.

According to behaviour change models[43], several reasons exist on why it is essential to identify factors at all three levels. For example, addressing personal factors alone is unlikely to work because it fails to take into account the complex and interrelated nature of the factors that influence what we do: we do not act in isolation, and most people are influenced, to a very great extent, by the people around them and the environment in which they live. Equally, it would be overly simplistic to focus on environmental factors, such as access to services or levels of taxation, while ignoring the social and personal factors at play. In other words, it is essential to identify factors influencing behaviour at the personal, social and environmental levels. Consequently, an 'ecological' approach – one that takes account of and addresses factors at all three levels is likely to be most effective in bringing about behaviour change. Models of behaviour help us to understand specific behaviours, by identifying the underlying factors which influence them. By contrast, theories of change show how behaviours change over time and can be changed. The two bodies of theory are complementary; understanding both is necessary to develop practical approaches to behaviour change[44].

Models relating to the behaviour of individuals are predominantly drawn from psychology and sociology, the disciplines which are most concerned with understanding the factors influencing human behaviour. These models build upon a standard economic theory which uses the working assumption that individuals tend to behave rationally, intending to maximise the benefit to themselves (in psychological terms, such models are 'expected utility' models). Economic theory provides the basis for considerations of human behaviour (especially those behaviours featuring a choice based on costs and benefits). The essential factor in most social-psychological models is attitudes, which tend to be conceived as the product of a deliberative calculation weighing an individual's beliefs about behaviour with the value they attach to those characteristics (these are 'expectancy-value' models[45]. Most social-psychological models remain intention-based; the most well-known example is Ajzen's Theory of Planned Behaviour (TPB).[46]

A central factor in the theory of planned behaviour is the individual*s intention to perform a given behaviour. Intentions are assumed to capture the motivational factors that influence behaviour; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, to perform the behaviour. As a general rule, the stronger the intention to engage in a behaviour, the more likely it should be its performance. It should be clear, however, that a behavioural intention can find expression

in behaviour only if the behaviour in question is under volitional control, i.e., if the person can decide at will to perform or not perform the behaviour.

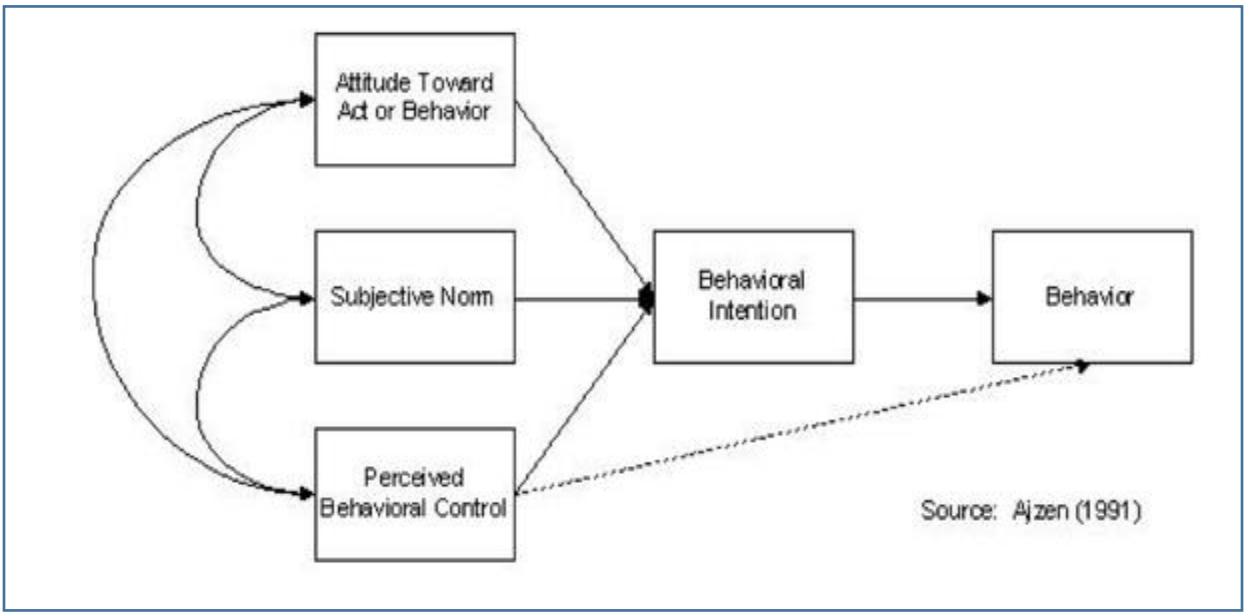

Figure 4 Theory of Planned Behaviour (Ajzen, 1991, p. 182)

Although some behaviours may meet this requirement quite well, the performance of most depends at least to some degree on such non-motivational factors as availability of requisite opportunities and resources (e.g., time, money, skills, the cooperation of others;[47]. Collectively, these factors represent people*s actual control over the behaviour. To the extent that a person has the required opportunities and resources, and intends to perform the behaviour, he or she should succeed in doing so[48] (Ajzen, 1991).

Table 1 Social-Psychological Theories of Behaviour and Change

Social Psychological Theory	Key References	Description
Attitude-Behaviour-Context (ABC) Theory	Stern and Oskamp 1987, 2000	A kind of **field theory** for environmentally significant behaviour. Behaviour (B) is an Stern interactive product of 'internal' attitudinal variables (A) and 'external' contextual factors (C)
Cognitive Dissonance Theory	Festinger 1957	Argues that people are motivated to avoid internally inconsistent (dissonant) beliefs, attitudes and values.

Cultural Theory	Thompson et al 1990	Hypothesises a four- fold typology of cultural 'types' with different conceptions of governance and the good life: hierarchists, egalitarians, individualists, and fatalists.
Elaboration-Likelihood Model	Petty 1977, Petty and Cacioppo 1981	A **persuasion** model which predicts that the long-term success of a persuasive message depends on how much mental processing or 'elaboration' of the message is undertaken by the subject (target).
Expectancy-Value Theory	Fishbein 1973, Ajzen and Fishbein 1980 eg	A broad class of theories (of which **rational choice** theory is one) based on the idea that behaviour is motivated by the expectations we have about the consequences of our behaviour and the values we attach to those outcomes.
Field Theory	Lewin 1951	Influential early social-psychological theory positing behaviour as a function of a dynamic 'field' of internal and external influences. Behavioural change relies on unfreezing (existing behaviours), shifting to a new level, and then refreezing.
Interpersonal Behaviour (TIB)	Triandis 1977	Like the **Theory of Reasoned Action** the Theory of Interpersonal Behaviour (TIB) includes both **expectancy-value** and normative belief constructs. However, TIB also includes the influence of habitual, social and affective factors on behaviour.
Motivation-Ability-Opportunity model	Ölander and Thogersen 1995	An integrated behavioural model that combines both internal motivational variables – usually based on the **Theory of Reasoned Action** - with external contextual variables of ability (including habit and task knowledge) and opportunity.

Means End Chain Theory	Gutman 1982, Reynolds and Olson 2001	A qualitative form of **expectancy-value theory** which posits that preferences are based on a 'laddered' relationship between attributes, consequences and values.
Norm Activation Theory	Schwartz 1977, 1992	One of the better known attempts to model pro-social or altruistic behaviours: a personal norm (PN) to behaviour in a pro- social way is activated by awareness of the consequences (AC) of one's actions and the ascription of personal responsibility (AR) for them.
Normative Conduct	Cialdini, Kallgren and Reno 1991	Cialdini's Focus Theory of Normative Conduct proposes that behaviour is guided by social norms which are either descriptive (what is done) or injunctive (what should be done) in nature. The strength or 'salience' of these different kinds of norm in a given context depends on a variety of dispositional and situational factors.
Persuasion Theory	Hovland et al 1953, Petty et al 2002.	A set of theoretical approaches to the 'art of persuasion' that identifies (1) the credibility of the source, (2) the message and (3) the thoughts/ feelings of the receiver as the three critical structural elements in the success of persuasion strategies.
Rational Choice Theory	Elster 1986, Homans 1961 etc	The underlying basis of most economic theories of consumer preference and several other social-psychological theories of behaviour. Suggests that behaviour is the outcome of rational deliberations in which individuals seek to maximise their own expected 'utility'.
Self- Discrepancy Theory	Higgins 1987	Suggests that people are motivated to act according to feelings aroused by the perceived gap between their actual and

		‘ideal’ selves.
Self-Perception Theory	Bem 1972	Proposes that people infer their attitudes by observing their own behaviour.
Subjective Expected Utility (SEU)	Ajzen and Fishbein 1980, Eagly and Chaiken 1993	A form of **expectancy value** theory closely related to the **rational choice** model, SEU theory suggests that behaviour is a function of the expected outcomes of the behaviour and the value assigned to those outcomes.
Structuration Theory	Giddens 1984	Attempts to provide a model of the relationship between agency (how people act) and structure (the social and institutional context). Giddens structuration theory relies on a distinction between ‘practical’ and ‘discursive’ consciousness.
Symbolic Interactionism	Blumer 1969, Mead 1934	Argues that people interact with things (artefacts, institutions, others) on the basis of the symbolic meanings those things have for them.
Symbolic Self-Completion Theory	Wicklund and Gollwitzer 1982	A **symbolic interactionist** theory which suggests that people create their sense of identity through the appropriation of symbolic resources to complete the ‘self- image’.
Theory of Planned Behaviour (TPA)	Ajzen 1991	Adjusts the **Theory of Reasoned Action** to incorporate the actor’s perceived control over the outcomes of his or her behaviour.
Theory of Reasoned Action (TRA)	Ajzen and Fishbein 1980	Perhaps the best-known social-psychological attitude-behaviour model, the Theory of Reasoned Action adjusts **expectancy-value theory** to incorporate normative social influences on behavioural intention.

Value-Belief-Norm Theory	Stern et al 1999, Stern 2000	An attempt to adjust Schwartz's **Norm Activation** theory to incorporate a more sophisticated relationship between values, beliefs, attitudes and norms.

Theories and models of human behaviour originate from all disciplines of the social sciences and model several ways in which behaviour is conceptualized and defined. The focus of behaviour change, mainly within the fields of psychology and sociology is on the individual as the locus of behaviour[49]. The argument is that individual-centric models and theories of behaviour change posit a greater or lesser impact by external factors such as society, but each hold behaviour to be an outcome of competing influences balanced and decided upon by the individual - thus placing significant emphasis on individual agency. Within this, individual behaviour is conceptualised either as somewhere on a continuum or at a particular discrete stage, of adopting a behaviour. Continuum theories can be used, for example, to predict how many times a person might conduct a behaviour, such as going for a forest walk, or the extent to which it is done, such as how much tree planting might be undertaken. Stage models are particularly useful for understanding the different factors that may influence individual choice and behaviour at different points on their 'journey' towards adopting the behaviour.

The individual-centric models and theories of behaviour change only focus on the individual, however, there are other factors beyond the individual which affects or influence behaviour such as the environment or context, relationships or policies[50]. For example, there are behaviour models theories move away from the individual to focus either on the behaviour itself, or relationships between behaviour, individuals and the social and physical environments in which they occur. Theories of innovation and disruptive innovation theories), in particular, focus on behaviours themselves as agents of change. Other sociological, anthropological, and geographical research (such as social practice theory and socio-technical systems) has tended to focus on behaviour as an outcome of complex inter-relationships and shared social practice. From these perspectives, individuals perform or reproduce behaviours that are themselves a product of relationships between people, their environment, and the technology that surrounds them[51].

The Health Belief Model[52] is a theoretical model that is used to guide health promotion and disease prevention programs. It explains and predicts individual changes in health behaviours. It is one of the most widely used models for understanding health behaviours. Key elements of the Health Belief Model focus on individual beliefs about health conditions, which predict individual health-related behaviours. The model defines the key factors that influence health behaviours as an individual's perceived threat to sickness or

disease (perceived susceptibility), the belief of consequence (perceived severity), potential positive benefits of action or change in behaviour (perceived benefits), perceived barriers to action, exposure to factors that prompt action (cues to action), and confidence in the ability to succeed (self-efficacy).

The Health Belief Model can be used to design short and long-term interventions. The five key action-related components that determine the ability of the Health Belief Model to identify key decision-making points that influence health behaviours are:

- Gathering information by conducting health needs assessments and other efforts to determine who is at risk and the population(s) that should be targeted.
- Conveying the consequences of the health issues associated with risk behaviours clearly and unambiguously to understand perceived severity.
- Communicating to the target population the steps that are involved in taking the recommended action and highlighting the benefits to action.
- Assisting in identifying and reducing barriers to action.
- Demonstrating actions through skill development activities and providing the support that enhances self-efficacy and the likelihood of successful behaviour changes.

These actions represent key elements of the Health Belief Model and can be used to design or adapt health promotion or disease prevention programs. The Health Belief Model is appropriate to be used alone or in combination with other theories or models. To ensure success with this model, it is important to identify "cues to action" that are meaningful and appropriate for the target population

Social Cognitive Theory (SCT) from the conceptualisation describes the influence of individual experiences, the actions of others, and environmental factors on individual health behaviours[53]. It highlights that human behaviour occurs in a social environment. By observing others, people acquire knowledge, skills, strategies, beliefs and attitudes. This theory also posits that individuals learn about the usefulness and appropriateness of behaviours by observing models and the consequences of modelled behaviours. The Social Cognitive Theory provides opportunities for social support through instilling expectations, self-efficacy and using observational learning and other reinforcements to achieve behaviour change.

Key components of this theory relate to individual behaviour change in key aspects that influence behaviour actions which are a combination of the following:

- *Self-efficacy*: The belief that an individual has control over and can execute a behaviour.

- *Behavioural capability*: Understanding and having the skill to perform a behaviour.
- *Expectations*: Determining the outcomes of behaviour change.
- *Expectancies*: Assigning a value to the outcomes of behaviour change.
- *Self-control*: Regulating and monitoring individual behaviours.
- *Observational learning*: Watching and observing outcomes of others performing or modelling the desired behaviours.
- *Reinforcements*: Promoting incentives and rewards that encourage behaviours change

The application of the theory uses a theoretical framework in different settings, contexts and populations. It is frequently used to guide behaviours change interventions. It may be particularly useful in rural communities for examining how individuals interact with their surroundings. The SCT can be used to understand the influence of social determinants of health and a person's past experiences on behaviours change.

The Stages of Change Model[54] , also known as the Trans-theoretical Model, explains an individual's readiness to change their behaviours. It describes the process of behaviours change as occurring in stages. These stages include:

- *Pre-contemplation*: There is no intention of taking action.
- *Contemplation*: There are intentions to take action and a plan to do so in the near future.
- *Preparation*: There is an intention to take action and some steps have been taken.
- *Action*: Behaviour has been changed for a short period.
- *Maintenance*: Behaviour has been changed and continues to be maintained for the long-term.
- *Termination*: There is no desire to return to prior negative behaviours.

The Stages of Change Model describes how an individual or organization integrates new behaviours, goals, and programs at various levels. At each stage, different intervention strategies will help individuals progress to the next stage and through the model. Individuals within a population will likely vary in their readiness to change. Also, it is important to recognize that move through this model is cyclical – individuals may progress to the next stage or regress to a previous stage. The Stages of Change model can be applied to health promotion and disease prevention programs to address a range of health behaviours, populations, and settings.

Two closely associated theories – The Theory of Reasoned Action and the Theory of Planned Behaviour they suggest that a person's health behaviour is determined by their intention to perform certain behaviours.[55] [56] A person's intention to perform a behaviour (behavioural intention) is predicted by a person's attitude toward the behaviour, and

subjective norms regarding the behaviour. Subjective norms are the result of social and environmental surroundings and a person's perceived control over the behaviour. Generally, a positive attitude and positive subjective norms result in greater perceived control and increase the likelihood of intentions governing changes in behaviour.

The Theory of Reasoned Action/Planned Behaviour provides useful information for predicting health behaviours and for planning and implementing health promotion and disease prevention programs. Subjective norms can be used to describe the behaviours of healthcare providers, patients, care providers, and others in the community. These theories have been used to guide health promotion and disease prevention.

Research evidence increasingly highlights that individualized interventions to behavioural change are of limited effectiveness, particularly among more resistant population groups which often include deprived populations and those in greatest need of behavioural change. According to documented models for effective behavioural change interventions, and those with long term sustained effects, tend to be those which incorporate multiple components and are informed by a socio-ecological approach, which highlights the importance of acting not only at the individual level but at the social, community, organisational, environmental and policy levels[57].

The socio-ecological approach, implicitly involves a whole-system approach to understanding and changing health behaviour, complex interventions, and a search not just for what works, for whom and in what circumstances? It is a comprehensive approach to social and behaviour change and recognizes that individual behaviour change does not result from improved knowledge alone, and cannot be promoted in isolation from the broader social context in which it occurs. As such, it explores the full range of factors that must be addressed at multiple levels to promote change, including behavioural changes effectively. These levels may include individual, society, environmental and policy contexts. With the conception that behaviours are shaped through a complex interplay of determinants at different levels; the social-ecological model helps to understand factors affecting behaviour and also guides developing successful programs through social environments.

Social-ecological models emphasize multiple levels of influence (such as individual, interpersonal, organizational, community and public policy) and the idea that behaviours both shape and are shaped by the social environment, as is depicted in the figure below[58]. The principles of social-ecological models are consistent with social cognitive theory

concepts which suggest that creating an environment conducive to change is important to make it easier to adopt healthy behaviours.

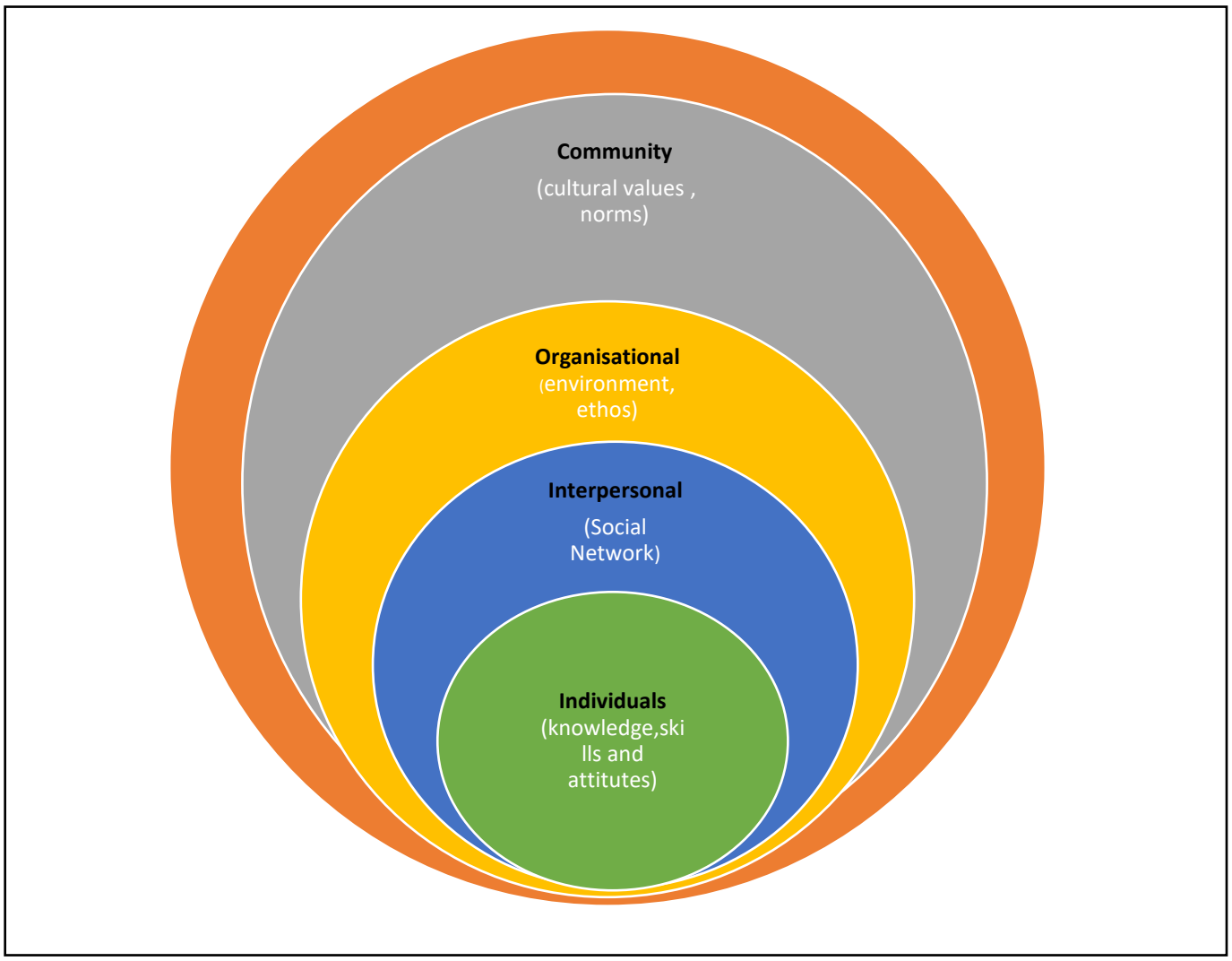

Figure 5 Social-Ecological Model Adopted from Bronfenbrenner (1977)

Diffusion of Innovation Theory

Instead of focusing entirely on individual decision-makers or social structures, the Diffusion of Innovation theory places its emphasis on innovation as an agent of behaviour change, with innovation defined as 'an idea, practice, or object perceived as new'[59]. According to the diffusion of innovation theory, the behaviour will change more rapidly if innovations are perceived as being better than previous options (relative advantage) and consistent with the existing values, experiences and needs of potential adopters (compatibility), if they are easy to understand (complexity), testable via limited trials

(trialability) and their results are visible (observability). Different information exchange relationships (communication channels) have specific impacts in terms of innovation diffusion. This theory particularly highlights the different roles of 'mass media' and 'interpersonal' channels, with the former especially useful for creating awareness amongst potential adopters and the latter being more effective in terms of persuading actual adoption. Some arguments suggest that innovations are evaluated "*through the subjective valuations of near-peers*" rather than via experts or scientific analyses, thus close interpersonal communications play a key role.[60] [61]

This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing. In public health, the Diffusion of Innovation Theory is used to accelerate the adoption of important public health programs that typically aim to change the behaviour of a social system. For example, an intervention to address a public health problem is developed, and the intervention is promoted to people in a social system with the goal of adoption (based on Diffusion of Innovation Theory). The most successful adoption of a public health program results from understanding the target population and the factors influencing their rate of adoption.

A distinction was drawn between models of behaviour and theories of change. From a conceptual point of view, this distinction can be quite hard to impose, as the two bodies of theory are closely related, and overlapping in places. However, the distinction becomes most evident in the context of practical guidance, where:

- Models of behaviour help us to understand specific behaviours, by identifying the underlying factors which influence them.
- Theories of change identify intervention techniques which can be effective in bringing about change, as well as suggesting broad approaches to intervention design, implementation and evaluation, which can underpin effective policy planning and delivery.

It is important to note that neither body of theory is alone sufficient to generate effective interventions. The Nine Principle framework was designed to integrate behavioural models with the theoretical understanding of practical approaches to change. The framework provides a starting point for selecting models and developing behaviour change interventions based on this premise[62]. The principles provide a process and steps to follow when design and implementing behaviour change interventions, which are:

- Identify the audience groups and target behaviour. If faced with a complex behaviour break it down into its component behaviours and/or adopt systems thinking approach

- Identify relevant behavioural models (use both individual- and societal level models). Draw up a shortlist of influencing factors
- Select the key influencing factors to work on Use these to design objectives in a draft strategy for the intervention
- Identify effective intervention techniques which have worked in the past on the influencing factors selected
- Engage the target audience for the intervention to understand the target behaviour and the factors influencing it from their perspective
- Develop a prototype intervention based on learning from working with the actors. Cross-check this against appropriate policy frameworks and assessment tools
- Pilot the intervention and monitor continuously
- Evaluate impacts and processes
- Feedback learning from the evaluation

The principles resemble existing theory-based guidance for planning interventions but aim to achieve a synthesis between the different approaches. The critical difference between the Nine Principles and other approaches such as social marketing and Gardner and Stern's Principles[63] is the building of behavioural models into the heart of the developing process. The Nine Principles can also be compared to the *Intervention Mapping (IM) framework*, which similarly centres on behavioural models, but which follows a more programmatic path to intervention development and implementation[64].

Intervention development requires a thorough understanding of the problem using theory and empirical evidence to specify determinants of behaviour and environmental conditions and to propose a change process. The IM approach proceeds through five steps (following an initial Needs Assessment stage), with each step generating a plan or matrix which becomes the basis of the next step. Despite the somewhat mechanistic method of IM, it represents a "problem-based" approach to using models, starting from the audience and the behaviour in question. Overall, the Nine Principle framework proposed takes account of the need for flexibility in developing interventions.[65]

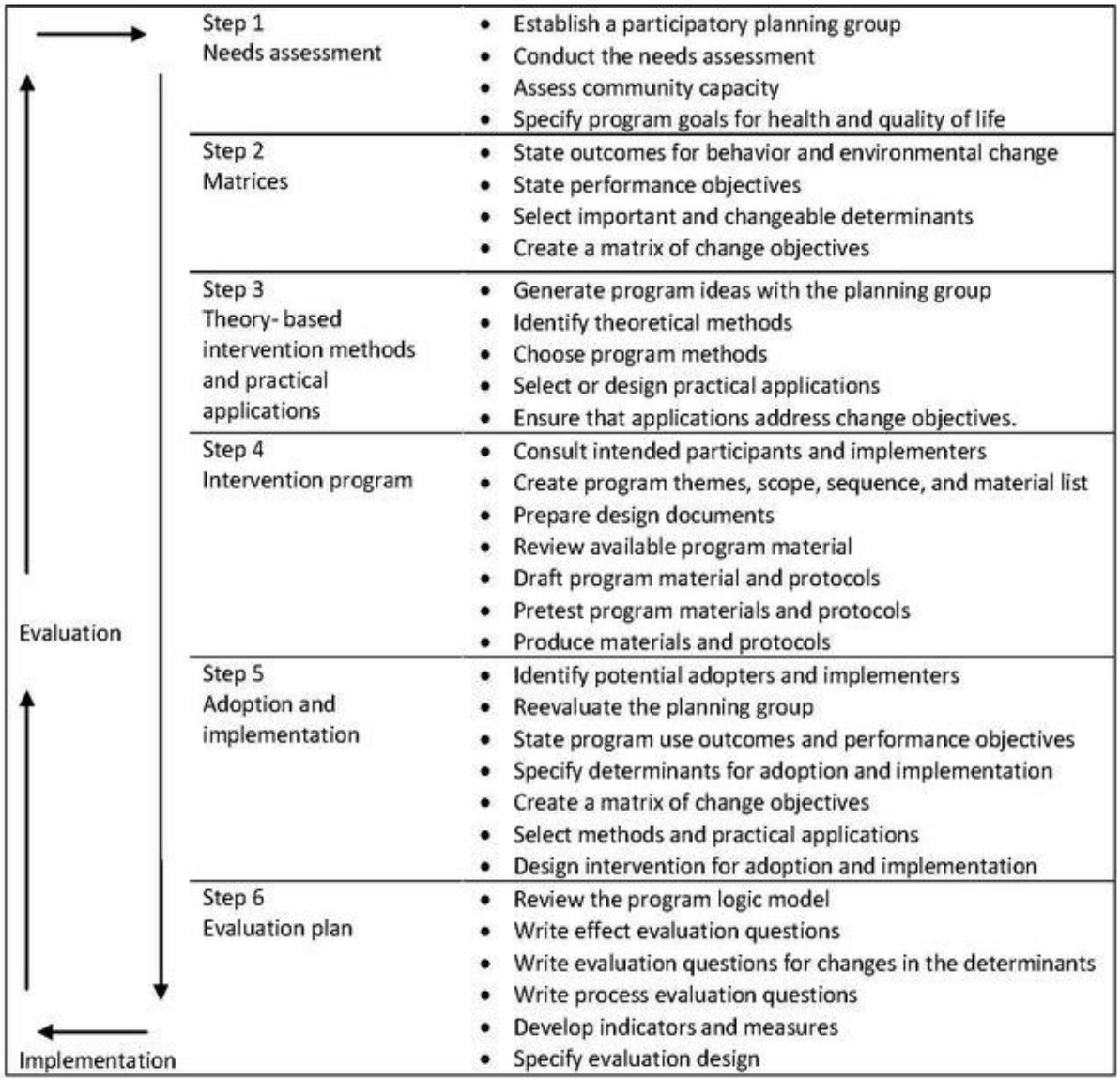

Figure 6 Intervention mapping framework[66].

Strategies for effective behaviour change

Behaviour change is important for a sustainable future. Historically, programs that promote sustainability have relied upon information-intensive campaigns to foster the adoption of environmentally friendly behaviour. Most of the campaigns for behaviour change use advertising to disseminate information to communities, and there has not been effective for changing behaviour[67]. To change human behaviour a persuasion technique must be designed to promote positive reinforcement or feedback, model a target behaviour or provide social support to someone changing. Societal and individual interventions are both important than any prescribed behaviour program. Some examples

of useful interventions include communication changing communication strategies that can improve social skills.

Health education is a cost-effective approach focusing on reducing the incidence, morbidity and mortality of chronic conditions, viruses and diseases such as obesity and asthma. However, to achieve positive health outcomes, the development of health education programs or materials must be thoughtful, sensitive to the needs of the targeted community, and evidence-based. Education is required to increase awareness of why it is important and to provide training on how to do it successfully. Education programs are effective for the transfer of knowledge, skills, and attitudes, yet ineffective in changing physician behaviour.

For education to increase awareness, it must provide an individual with a better understanding of the personal relevance of the information. Providing general knowledge will not do that. Educating individuals on the definition and consequences of a virus or disease is not likely to lead to behaviour change. Behaviour change is more likely if education increases individuals' awareness that they suffer from a virus or disease and are personally experiencing the consequences of the virus or disease. Customized education is necessary to increase awareness because customizing ensures that the information is relevant to the individual. Customized education is also more likely to include an explanation of why the information is relevant specifically to the people.

Health education is any learning experience designed to help individuals improve their health by increasing knowledge or influencing attitudes and can take on many forms. An important consideration when presenting health education is health communication or the use of communication strategies to inform and influence health decisions[68]. Health education can have a major impact on the health and well-being of those people who are affected, as well as decrease health care costs by encouraging appropriate utilization of ERs. However, health education geared toward changing health-related behaviour requires more than the development of accurate, relevant information

While the effectiveness of tailored communication within health programs has been reported to benefit groups, some may benefit more than others. For-example, tailored communication for low-literacy or minority populations may be more beneficiary than the average population. Considering the many challenges that these individuals face regarding their health and well-being, there is a significant need to effectively increase efforts to inform these and other at-risk populations. However, studies have shown that an innovative and appropriate method for assisting parents in health care decision-making is through the distribution of simple, informative, and durable reference guides written at a low-literacy level. Health education materials should take the current needs of the target population into account and should be engaging, creative, relevant, culturally appropriate, understandable, and widely distributed. Health education's seeming lack of

success is based upon the fact that its limitations are highlighted by the huge discrepancies that exist between clients' beliefs and behaviours, as well as the notion that most clients fail to adhere to the oughts' of health behaviour[69].

Over the years mass media campaigns have been utilised in an attempt to affect various health behaviours in mass populations. These campaigns have particularly been focusing on alcohol and illicit drug use, sex-related behaviours, and many other health-related issues. The word ‘mass media’ is defined as newspaper, magazines, radio, movies, television, music recording, books, and the internet[70]. Mass media is a prime source of information for the majority of the population in the world. Mass media has a great deal of influencing people’s behaviour. According to studies[71], there are two principal theoretical justifications for why mass media can influence people’s behaviour. Primarily, mass media can change people’s believes by providing applicable information. Moreover, mass media can have a direct influence on people’s behaviour by way of persuasion. Furthermore, mass media have a role as a political force and as an instrument for public education, and above all as an agent of power, politics, and commerce. In the process of accepting or adopting a new behaviour, an individual passes through various stages such as exposure, attention, attraction to the message, comprehension, knowledge, favourable attitudes, retention, motivation, decision, skills acquisitions to the new idea[72].

Mass media is considered to have pathways to change people’s behaviour. A multi-study on evaluating the impact of mass media on behaviour change[73] indicated that mass media can work through direct and indirect pathways to change the people’s behaviour. Majority of the campaigns that are used to change people behaviour focused on directly affecting individuals by soliciting cognitive or emotional responses. Therefore, mass media programmes deliberately affect decision-making processes at the individual level. However, there are expected outcomes from the usage of mass media which include and not limited to the removal or lowering of obstacles to change, helping people to adopt healthily or recognise unhealthy social norms and to associate valued emotions with achieving change.

These changes strengthen intentions to alter and increase the likelihood of achieving new behaviours. For instance, an antismoking campaign might emphasise risks of smoking and benefits of quitting, provide a telephone number for a support line, remind smokers of positive social norms concerning quitting, associate quitting with positive self-regard or a combination of these features

Behaviour change can be communicated using various channels – radio, television, videos, SMS and many other channels. Nevertheless, with the fast-growing of internet-based communication social media has appeared as one of the preferred communication channels[74]. Social media is unique from other communication channels as it is more participatory, socially engaging, and reciprocal. Furthermore, this communication

channel offers people opportunities not only limited to information sharing but also for social networking and interactive engagement.

Social media plays a continuous important role as a source of information. One of the main aspects that different social media with other types of mass media is that distinguishing features of social media is that it allows for a large number of users to converse directly without intermediaries at a very low cost. New evidence demonstrates that this feature can have important consequences for political behaviour, as it increases the role of social influence and makes it easier for the users of social media to coordinate and overcome collective action problem.

Social media is participatory, socially engaging, and reciprocal. It thus provides opportunities not only for information sharing but also for social networking and interactive engagement between individual and communities. Social media is utilised for health communication in several ways. Educating and empowering people with health information is one area where social media plays a vital role in information sharing. The greater availability to social media, a vast number of people now have access to health information. This has promoted the healthcare industry to connect and engage with their clients through social media platforms. Moreover, social media is being used in searching for health information and people are now able to manage their health conditions through the use of media[75]. Conveying public health messages and encouraging partnerships for community actions are several ways that social media can be used for public health positive effects. Social media is useful in surveillance, tracking and monitoring of disease outbreak as well as in providing cost-effective communication in real-time. Additionally, social media can be used in identifying vulnerable areas which require interventions, monitor the response of people on health-related issues and communicate relevant health messages to various specific communities.

The most common mass media have been newspaper, posters, billboards, radio and television. Newspaper, posters and billboards have a lasting nature which radio and television have do not have. Posters and billboards offer people visual information as the express information in graphical presentation. Poster and billboard are useful tools to communicate with new or existing audiences. They are printed sheets meant to be distributed in a public place. They are most often used to support a promotion such as new information or service. Their role is the same as many other advertising materials, as their key function is to catch a reader's attention and then motivates the readers them to take action[76]. The advantage of posters and billboards is that they can be displayed almost anywhere, however, they must be in areas where you have a captive audience. Posters and billboards are useful communication tools to spread information rapidly and increases awareness. They are often a highly flexible and inexpensive form of advertising when compared to other marketing materials. Whereas the procedures are comparatively

easy, attention should be given to locations to ensure communication messages reach target audiences to change their behaviour.

On the other hand, radio tends to be the most prevalent, more especially in the rural areas, and it is said to be utilised overcome the illiteracy barriers[77]. A study to assess the effectiveness of health education in Swaziland using radio[78]indicated that radio has been the mass medium used most extensively in developing societies, as a cost-effect means of providing information and education to diverse target groups. Also, radio provides targeted groups such as farmers, rural mothers, illiterates, primary school children, informal and non-formal education. Although radio has been actively used over the years it has been educating and informing the population on about various diseases and other health-related issues through drama, talk shows, quizzes, advertisements for several campaigns. radio is a populist medium and it also has some kind of a personal touch to message content and delivery, even though the message is rather lasting for a short time.

Television has a versatility based on the communication of sound and images but has not achieved the wide reach of radio. Also, television is largely urban-based and may not be widely available for the lower working class and the rural poor. This could be attributed to the fact that the television price is more expensive than radio. Therefore, television can be less effective since there is a household that is likely not to have it in their homes.

A message is information content transmitted from a sender to a receiver in a single context on one occasion[79]. Different combinations of linguistic expressions are usually employed in mass communications to convey messages. For instance, a newspaper generally uses both the printed word and different kinds of pictures. On the other hand, a television programme employs words, images and sounds. The main principal parts in message design are words, visuals and forms. These principal parts are utilized in various ways to design, produce, transmit and interpret messages. According to message design publications[80], there are five (5) different “message design genera” namely, Graphic design, information design, instruction design, mass design and persuasion design. All five message design has its objectives when it comes to message design.

Behaviour change interventions can be monitored by using “Participatory monitoring” methods—a process of evidence-based learning for action in collaboration with stakeholders—aims to improve our understanding of results while also strengthening local capacity, institutional development, and sustainability of efforts[81]. Participatory monitoring attempts to set the ability to define and measure success on people that programs are intended to benefit. Family Health International[82] postulates that the Participatory Monitoring is in place to understand what works in programs should not be the exclusive domain of evaluation experts, donors, and international program planners. However, the people on the ground, those most affected by a program, should also understand.

Behaviour change uses tools to measure change, some of the tools found in the literature[83] include the following as useful – *Prompt*, which its purpose is to remind a person to do something they were already disposed to do. Prompts attempt to overcome the barrier of habit or forgetfulness; for example, people often simply forget to do such as wearing a mask and sanitizing hands[84]. The prompt tool is a "visual or auditory aid which reminds us to carry out an activity that we might otherwise forget". Prompts can take a variety of forms including signs, posters, stickers and flyers.

Norm Appeals – this is explained as what people in some groups believe to be normal in a group. These are believed to be typical action, an appropriate action, and acceptable action[85]. Social norms change and social transformations occur require people who are well-connected, well-informed, and those who are good at communicating and persuading to all promote the same idea. Additionally, Norm appeals can be incorporated into messages, or behavioural norms can be established by recruiting community leaders to promote the desired behaviour[86]

Commitment - research has shown that getting people to commit can be one of the most effective interventions. This commitment can be written or verbal, public or private, individual or group; although some forms of commitments appear to be more effective than others. The commitment tools seem to work because people value consistency, between what we say and what we do, and between what we do at different points in time[87]. Thus commitments have the potential to influence both behavioural and attitudinal change and seem to have long-lasting effects.

Benefits of adaptation

A comprehensive approach to social and behaviour change recognises that individual behaviour change does not result from improved knowledge alone, and cannot be promoted in isolation from the broader social context in which it occurs[88]. Health education has been an integral part of most national health programmes over the past several decades. It is based on the premise that only ignorance or lack of information prevents people from adopting healthy behaviour. Health education methods mostly consist of providing information and persuasion tactics through a top-down approach. This "trickle-down" model has failed to address a crucial issue, specifically, "why do people continue to indulge in harmful practices despite being told and being aware of the harmful effects". Health education has demonstrated that making information available brings about knowledge gain, which also improves understanding. Ultimately, it is clear that access to information results in knowledge gain and understanding; however, this does not bring about the desired behaviour change[89]. Communication for behavioural change activities, therefore, needs to be reinforced by other BCI elements including healthy policy, creating an enabling environment, providing easy access to health services, imparting skills, capacity building, social and community mobilisation and

partnerships. Advocacy plays an important role in BCI to influence policy and decision-makers and initiate social action to create a supportive environment for Behavioural Change Interventions[90].

Behavioural change intervention is a combination of activities/interventions tailored to the needs of a specific group and developed with that group to help reduce risk behaviours and vulnerability to COVID by creating an enabling environment for individual and collective change. Whereas behaviour change communication is an interactive process with communities (as integrated with an overall program) to develop tailored messages and approaches using a variety of communication channels to develop positive behaviours; promote and sustain individual, community and societal behaviour change; and maintain appropriate behaviours[91]. In the context of the COVID-19 pandemic, Behavioural change communication is an essential part of a comprehensive program that includes both services (medical, social, psychological and spiritual) and commodities (e.g., masks, sanitisers). Before individuals and communities can reduce their level of risk or change their behaviours, they must first understand basic facts about COVID-19, adopt critical attitudes, learn a set of skills and be given access to appropriate products and services. They must also perceive their environment as supporting behaviour change and the maintenance of safe behaviours, as well as supportive of seeking appropriate treatment for the prevention, care and support.

Behavioural Change Information, Education and Communication should play an integral component of a comprehensive COVID-19 prevention, care and support program. It has several different but interrelated roles. Effective behaviour change programme can:

- *Increase knowledge*- behaviour change programme can ensure that people are given the basic facts about COVID-19 in a language or visual medium (or any other medium that they can understand and relate to).
- *Stimulate community dialogue*- behaviour change programme can encourage community and national discussions on the basic facts of COVID-19 and the underlying factors that contribute to the pandemic, such as risk behaviours and risk settings, environments and cultural practices that create these conditions. It can also stimulate discussion of healthcare-seeking behaviours for prevention, care and support.
- *Promote essential attitude change* - behaviour change programme can lead to appropriate attitudinal changes. For example, perceived personal risk of COVID-19 infection, belief in the right to and responsibility for safe practices and health support services, compassionate and non-judgmental provision of services, greater open-mindedness concerning gender roles and increasing the basic rights of those vulnerable to and affected by COVID-19 pandemic.

- *Reduce stigma and discrimination* - behaviour change programme on COVID prevention and mitigation should address stigma and discrimination and attempt to influence social responses to them.
- *Create a demand for information and services* - behaviour change programme can spur individuals and communities to demand information on COVID-19 and appropriate services.
- *Advocate* - behaviour change programme can lead the policymakers toward effective approaches to the pandemic.
- *Promote services for prevention, care and support* - behaviour change programme can promote services quality and experience of services provided to combat the effects of COVID-19 on the population, especially services directed to vulnerable groups, including testing, clinical care, social and economic support.
- *Improve skills and sense of self-efficacy* - behaviour change programme programs can focus on teaching or reinforcing new skills and behaviours, such as practising of social distancing, washing of hands regularly, wearing masks in public. It can contribute to the development of a sense of confidence in making and acting on decisions.

Information, education and communication channel is an approach where a message is disseminated. It is essential to know which channels can most effectively reach particular target populations. Identifying the range of available channels should be part of every formative BCC assessment. Messages can be delivered through mass media—for example, television or radio; articles in periodicals; or material in brochures, posters, flip charts, picture codes or comics—or in-person, by health workers, peer educators, counsellors, or other trained personnel. Additional means of delivery include musical or dramatic performances and community events. Messages can be reinforced with “gimmicks” such as key chains or stickers.

It is crucial to think about how particular channels can help achieve particular goals. Each medium has its advantages and disadvantages, so that each may be best suited to a particular circumstance. For example, research has shown that mass media can raise awareness of specific facts because the mass media are assumed to carry a specific authority and reliability. Mass media can also model behaviours and positive attitudes in the person of respected members of the target community. Later on in the process, however, target populations appear less interested in media authority than they are in the opinions and behaviours of people to whom they feel close. Interpersonal communication becomes primary, while the mass media play a supporting role. If mass media are used, it is essential to know which radio stations and TV programs are popular with the target population. Peer education (or peer facilitation) is a cornerstone of all interventions with target populations. In Peer Education, Concepts, Uses and Challenges publication by UNAIDS[92], reported having found that peer education has an overwhelmingly positive

impact on incidence and risk behaviours. Peer educators can help reach specific groups, model safe behaviours, stimulate community discussions and provide referrals to appropriate services. Communication messages, viewed as information, are usually conveyed through interpersonal channels and the mass media[93]. Interpersonal communication which includes group media is intended to reach a specific group with a particular message Group media promotes face-to-face interpersonal communication with small groups. As opposed to this, the mass media channel is aimed at reaching large population groups in different places rapidly. This medium uses television, radio, posters and billboards, among others. As a prerequisite for success, the strengths and limitations of each medium of communication should be established by the programme planner or facilitator to utilise the approach likely to deliver the desired results for behavioural change[94].

Table 2 Information, Communications Channels: Strengths and Limitations

Type	Channel	Strength	Limitation
Interpersonal group media	• Various forms of face-to- face discussions • Public meetings and lectures	• Interpersonal • Allows feedback • Messages are target-specific • Facilitators have control • Can be used repeatedly • Requires less technology • Simple to monitor and evaluate	• Limited reach • Requires expertise
	• Drama/Theatre • Street plays • Role plays • Song and dance • Pamphlets • Book markers • Community radio • Guidelines • Posters • Text books (school • Video/DVD/CD • Demonstrations		
Type	**Channel**	**Strength (Select)**	**Limitation (Select)**
Mass media	• Radio • Television • Newspapers • Posters • Banners • Billboards • Internet • Mobile Phones • Video/DVD/CD • Press Releases	• Wider reach of audiences • Requires less human resources • Easy to access	• No clear audience • No feedback • Gender, age and education bias • Lack of appeal • High costs • Difficult to monitor and evaluate

Source: WHO, 2008, p.13

6. Recommendations

The literature demonstrates that behaviour change is the best tool to prevent morbidity and mortality from preventable conditions. It also suggests is the smarter way of reducing the burdens associated with a healthy population. However, effective behaviour change interventions require to be based on known existing frameworks as a basis for developing new interventions. To choose interventions that will be likely to be most effective, it makes sense to start with a model of behaviour. The model should capture the range of mechanisms that may be involved in change, including those that are internal (psychological and physical) and those that involve changes to the external environment[95].

In general, insufficient attention appears to be given to analysing the nature of behaviour as the starting point of behaviour change interventions[96], a notable exception being intervention mapping[97]. The nature of the behaviour is identified as one of 12 theoretical domains of influence on implementation-relevant behaviours[98]. Whilst this framework of 12 theoretical domains has proved useful in assessing and intervening with implementation problems[99], the domain of behaviour has remained under-theorised and therefore underused in its application.

To achieve its goal, a framework for characterizing interventions should be comprehensive: it should apply to every intervention that has been or could be developed. Failure to do this limits the scope of the system to offer options for intervention designers that may be effective. Second, the framework needs to be coherent in that its categories are all exemplars of the same type of entity and have a broadly similar level of specificity. Thus, categories should be from a super-ordinate entity (e.g., a function of the intervention), and the framework should not include some categories that are very broad and others very specific.

Also, the categories should be able to be linked to specific behaviour change mechanisms that in turn can be linked to the model of behaviour. These requirements constitute three criteria of usefulness that can be used to evaluate the framework: comprehensiveness, coherence, and links to an overarching model of behaviour. We limited the criteria to those we considered to form a basis for judging adequacy. There are others, e.g., parsimony, that is desirable features but do not lend themselves to thresholds. Other criteria can be used to evaluate its applicability, e.g., reliability, ease of use, ease of communication, ability to explain outcomes, usefulness for generating new interventions, and ability to predict the effectiveness of interventions.

The research paper suggests, for the social development portfolio, to implement an effective behaviour change programme would need to have a systematic design

programme. The programme must be based on scientific methodologies and approaches that have been used and tested to work. COVID-19 is a new pandemic that the scientific community is still in a learning curve on how to contain and manage it. However, some facts are already known about its transmission and preventative measures that the population can adopt and practice. All the measures for preventing spread and transmission are rooted in how people behave and how people understand the implications of their behaviours.

We also note that these behaviour measures have to be learned, acceptable and easy to adapt as new behaviours. At the same time, it is also understandable and known that changing behaviour is very difficult unless there are some incentives or disincentives attached to it. Its is for this reason that a systematic approach must be adopted and designed to implement the social development sector behaviour change programme. Methods of regulations, enforcement, policing etc have proven not to produce the desired behaviour change. These methods have tended to be rejected and may result in unintended behaviours that are more harmful than what you want to address.

Behaviour change programme requires an interactive process with a range of stakeholders, communities, individuals and must be part of overall programme design. There are requirements for the design of the behaviour change programme, these include a framework for design, stated objectives, outcomes expected, programme plan and activities, resources and monitoring and evaluation of the programme.

In the context of the COVID-19 epidemic, behaviour change programme is an essential part of a comprehensive COVID-19 response intervention strategy interventions that include both services (medical, social, psychological and spiritual) and commodities (e.g., sanitizers, masks, observing social distancing). Before individuals and communities can reduce their level of risk or change their behaviours, they must first understand basic facts about COVID-19, adopt key attitudes, learn a set of skills and be given access to appropriate products and services. They must also perceive their environment as supporting behaviour change and the maintenance of safe behaviours, as well as supportive of seeking appropriate treatment for the prevention, care and support.

COVID-19 is a respiratory condition and primarily transmitted from infectious people to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces. COVID-19, as a Novel virus, it does not have a vaccine or therapeutic. Public health experts and scientists are still collecting data and testing clinical interventions (vaccines and therapeutics) to respond to the pandemic. However, there have been many studies and tracking data for the disease to build an understanding of the behaviour of the virus. Its transmission is now generally accepted on how it behaves. This information has led to the conclusions

on best-known pathways to prevent spread and containment of the spread of the virus amongst human beings.

The known method to disrupt COVID-19 transmission is limiting a person to person contact. This is the most complex and difficult process to undertake. Learned human behaviour, over time it becomes a norm for most societies. It is for these reasons that, to reduce and contain the transmission of COVID-19, we need to design and robust, scientifically proven methods of behaviour change. Behaviour change programmes, first and foremost, requires engagements and discussions to understand what people perceive as a problem, existing behaviours towards the problems, beliefs that they hold, cultural practices, risk behaviours that may increase the likelihood of COVID-19 transmission. A supportive environment is also important to mitigate the levels of anxiety, fear, stigma and discrimination, as well as with policy and law applicable to contain the virus.

The COVID-19 epidemic forces societies to confront cultural ideals and practices that can contribute to COVID-19 transmission. These include how we relate to one another, how we worship, how we conduct funerals and many other sensitive cultural beliefs. An effective behaviour change programme must set the tone for compassionate and responsible interventions. It must also produce insight into the broader socio-economic impacts of the epidemic and mobilize the political, social and economic responses needed to mount an effective program.

The research paper proposes a pragmatic behaviour change approach for the social development sector, based on sound practice and experience, focuses on building local, regional and national capacity to develop integrated behaviour change that leads to positive action by stimulating society-wide discussions. Behaviour change interventions are an essential component of each program area and the glue between the various areas within the social development sector. However, it is important to state that society-wide change is slow; changes achieved through behaviour change programmes not occur overnight.

The framework requires careful planning of the sector behaviour change interventions. Different components require integrated planning and execution across all programmes of the sector. This will guide how the sector will mount its interventions targeting behaviour change for different population targets and sectors in adopting risk-averse behaviour and practices. The literature has shown that poorly planned behaviour change programmes have no effect or impact on behaviour change due to lack of defined processes, defined outputs and monitoring systems.

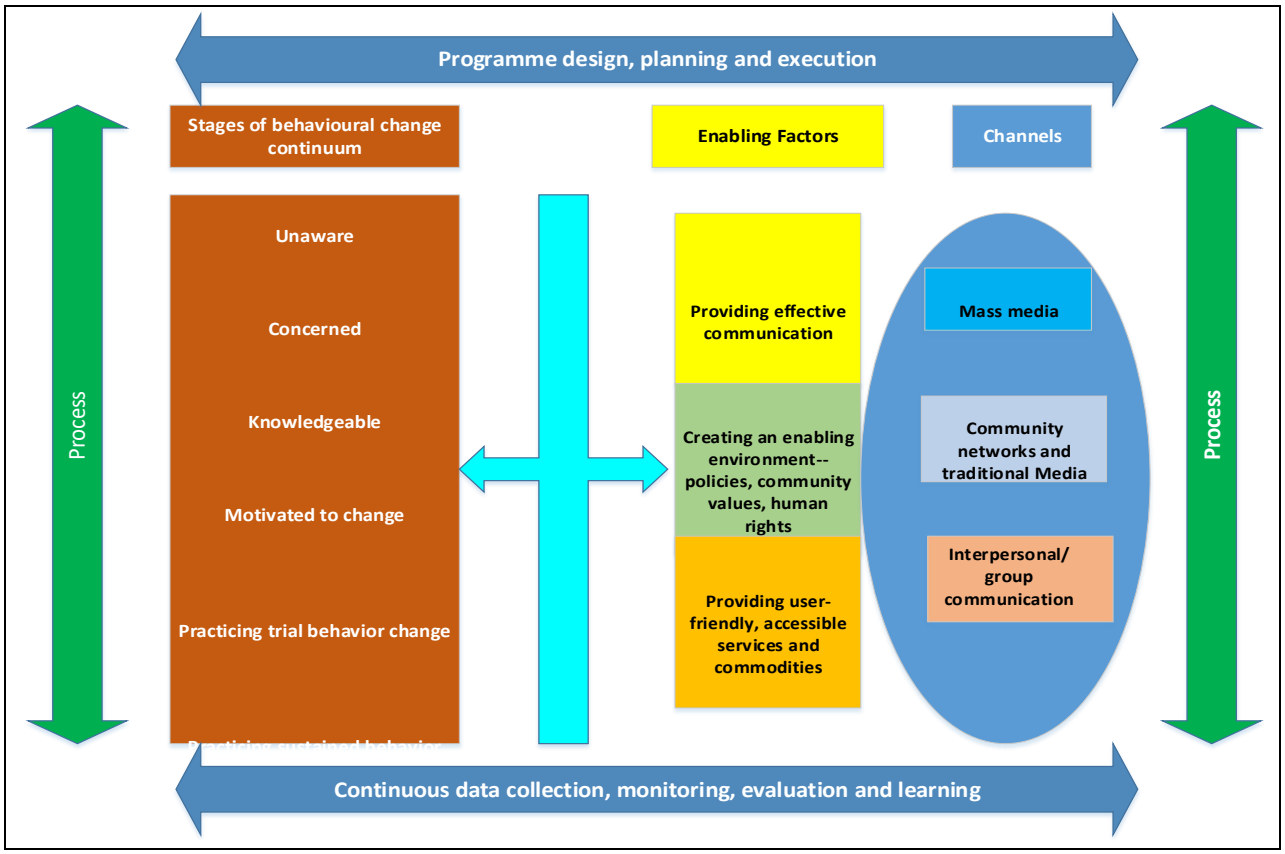

Figure 7 Social Development Portfolio Behaviour Change Framework (Adapted from FHI framework for BCC design)

The first part of the framework is designing, planning and outlining the processes for a behaviour change intervention. This requires the development of guiding principles of the programme and a range of behaviour change interventions that will be executed. The following principles are crucial in the format part of the programme design:

- *Behaviour change programme design* must be integrated with program goals from the start. Behaviour change is an essential element of COVID-19 prevention, care and support programs, providing critical linkages to other program components, including policy initiatives.
- *Formative BCC assessments* must be conducted to improve understanding of the needs of target populations, as well as of the barriers to and support for behaviour change that their members face (along with other populations, such as stakeholders, service providers and community).
- *The target population* should participate in all phases of BCC development and much of implementation.
- *Stakeholders* must be identified, targeted, and must be involved from the design stage.

- *Have a variety of linked communication* channels to be more effective than relying on one specific one.
- *Pre-testing of information, education and information (IEC)* materials are essential for developing effective behaviour change materials for the programme.
- *Planning for monitoring and evaluation* should be part of the design of any behaviour change programme it does not come at the end of the programme.
- *Behaviour change strategies* should be positive and action-oriented to demonstrate the benefits of changing behaviour.
- *Programmes staff in the sector* are the critical component in behaviour change planning, implementation, monitoring and evaluation.

Behaviour change has a continuum. It starts from being unaware and progresses until a person, group of people or community fully practice newly acquired be behaviour. To achieve the continuum, the behaviour change programme must seek to:

- *Increase knowledge* by ensuring that people are given the basic facts about COVID-19 in a language or visual medium appropriate for their level of understanding and relate to their daily experiences and practical for them to make a decision.
- *Stimulate community dialogue*, encourage community and national discussions and dialogues on the basic facts of COVID-19 and the underlying factors that contribute to the epidemic, such as risk behaviours and risk settings, environments and cultural practices related to the spread and contracting the COVID-19 virus. It can also stimulate discussion of healthcare-seeking behaviours for prevention, care and support for people who have contracted the disease.
- *Promote essential attitude change* this will lead to appropriate attitudinal changes about, amongst others, perceived personal risk of COVID-19 infection, belief in the right to and responsibility for safe practices and health support services, compassionate and non-judgmental provision of services, greater open-mindedness concerning gender roles and increasing the basic rights of those vulnerable to and affected by COVID-19.
- *Reduce fake information, stigma and discrimination* through information, education and communication about COVID-19 mitigation. The messages for information, education and communication must address fake information, stigma, discrimination, and attempt to influence social responses to promote non-risky behaviours.
- *Create a demand for information and services*, this can spur individuals and communities to demand information on COVID-19 and appropriate services. This requires services to be have been ramped up to meet the demand; the supply side must be ready to meet the demand and promote trust on the information provided.

- *Advocacy* is an essential tool to convince and get buy-in for policymakers and opinion leaders toward effective approaches to the epidemic. COVID-19 needs champions in this target group (policymakers and opinion leaders) to drive behaviour change. The credibility of those who drive behaviour change programmes in important.
- *Promote services for prevention, care and support* the messages must promote preventative interventions such as screening and testing for early detection, personal hygiene washing of hands with soap and running water, social distancing, avoiding crowded spaces, wearing of a mask, clinical care for those infected; and social and economic support. Behaviour change interventions must be an integral component of these services.
- *Improve skills and sense of self-efficacy* for individuals and communities, behaviour change programmes must focus on teaching or reinforcing new skills and behaviours, such as wearing of masks, frequent washing of hands with soap and running water, shielding of mouth when coughing, keeping distance with people that don't stay with you and all of the new behaviours promoting prevention. Change in behaviour in these can contribute to the development of a sense of confidence in making and acting on decisions.

An effective behaviour change programme needs an enabling environment. Since the drivers of behaviour change are based on information, education and communication, some enablers need to be in place. These include amongst others, target population's needs and situation taken into consideration, themes and key messages for the programme, well-tested messages developed with the participation of target populations are disseminated. With proper planning, behaviour change program implementers can build on existing quality communication and benefit from existing opportunities. Mutually reinforcing messages lend legitimacy to one another and stimulate community discussion and dialogue.

Interpersonal communicators, such as peer educators, outreach workers, counsellors and other service providers, need to be prepared and well informed of both the findings of formative research and the key messages so that their work will support that of the campaign and vice versa. For example, to make use of research findings and the content of messages, they will need to know any internal and external barriers and enabling factors. They should be prepared to promote services and products and to deliver communication messages. They will need to know of and be prepared to build on other communication activities. For example, they will have to ensure that audiences are aware of various mass communication activities and promote the discussion of messages. If mutually reinforcing messages are to be delivered and community discussion stimulated, this preparation is essential.

In the implementation phase, all elements of the strategy go into operation. An especially important element is management. All partners, programmers and channels of the behaviour change programme must be closely coordinated. There must be links among critical program elements, such as supply and demand. If populations discover that wearing of mask and use of hands sanitizers are being promoted by COVID-19 behaviour change messages and materials are unavailable, the programs will suffer and lose credibility and trust. Timing and coordination are key to managing a program effectively. Because the behaviour change strategy is linked to other parts of the prevention and care effort, behaviour change specialists must work as members of a broader team and coordinate their activities. Coordinators of each component of the team should keep others informed of their progress and activities. Ongoing communication with partners about areas outside of prevention and care should also take place.

Team members should track what gatekeepers, stakeholders and influential parties say and do and, where appropriate, modify the campaign accordingly. Working with these partners, programs must design formal mechanisms to ensure coordination and manage any conflicts or problems that might arise. Examples of such mechanisms are regularly scheduled meetings to share monitoring information or review and updating work plans. Identifying a focal point within each organization can help ensure that communication is timely and appropriate. It is also necessary during the implementation phase to review the preceding steps in the behaviour change process to ascertain whether the program has been addressing the target audiences' previously identified problems and needs. This can also help identify whether behaviour change and communication goals are being achieved and whether channels are being used as wisely as possible.

In creating an enabling environment, it is essential to budget adequately for all steps needed to develop a behaviour change program. It is important that monitoring is carried out as planned. Often monitoring receives inadequate attention, both in terms of collecting information and, still more often, in making sure it gets fed back in usable form to people who need it for decision-making and field implementation. Specific personnel must be designated to make sure that the monitoring plan is developed with input from the people who will use it; to make sure that everyone involved knows the expected outcomes and has the appropriate tools and skills, and to make sure that there are budget and time enough to carry the plan out.

It is necessary to establish effective information-gathering systems. These include but not limited to reports and reviews of materials. The Department should ensure that the reporting tools and protocols are standardised to ensure consistency. Peer educators can collect responses from target populations to help identify changes that may have to be made in the environment or aspects of communication and services that may need to be addressed. Useful monitoring data enables programs to demonstrate the degree to which

they have contributed to changes as measured by national surveillance systems, such as the Behavioural Surveillance Survey[100]. Questions related to communication intervention can be added to such a survey to assess the activities' reach.

A channel is a way a message is disseminated. It is important to know which channels can most effectively reach particular target populations. Identifying the range of available channels should be part of the formative behaviour change pre-programme assessment. Messages can be delivered through mass media which includes electronic, print and face to face. Electronic media, which includes television, radio and internet (social media) can be effective as it also allows interactive communications. The print is also a channel that is widely used and effective, messages can be packaged in a form of articles in newspapers and magazines, brochures, posters, flip charts, picture codes or comics that can be translated into different languages and targeted for a range of target audiences. The face to face (interpersonal channel) is also effective at it utilizes already available resources such as community workers, social workers, health workers, peer educators, volunteers and other trained personnel to pass messages to people and communities. Additional means of delivery include musical or dramatic performances and community events. Messages can be reinforced with "gimmicks" such as key chains or stickers.

It is important to think about how particular channels can help achieve particular goals. Each medium has its advantages and disadvantages, so that each may be best suited to a particular circumstance. For example, research has shown that mass media can raise awareness of specific facts because the mass media are assumed to carry a certain authority and reliability. Mass media can also model behaviours and positive attitudes in the person of respected members of the target community. Later on in the process, however, target populations appear less interested in media authority than they are in the opinions and behaviours of people to whom they feel close. Interpersonal communication becomes primary, while the mass media play a supporting role.

If mass media are used, it is important to know which radio stations and TV programs are popular with the target population. It may not be cost-effective to use a less expensive AM news station if the message is intended for youth who primarily listen to FM music stations. Peer education (or peer facilitation) is a cornerstone of all interventions with target populations. In a published literature review on mass media for behaviour change,[101] [102] it reported having found that peer education has an overwhelmingly positive impact on risk behaviours modifications and changes. Peer educators can help reach specific groups, model safe behaviours, stimulate community discussions and provide referrals to appropriate services.

Research and continuous collection of behavioural change data are important for a behavioural change programme. A plan for monitoring and evaluation needs to be developed during the initial stage of the Behavioural Change programme. The information

collected for behaviour change is used to linked outputs, outcomes and impact in the overall monitoring system. Monitoring key component for ongoing management of communication activities, and it must also focus on the process of implementation. The following areas are needs close monitoring using behaviour change programme data:

- *Reach:* Are adequate numbers of the audience being reached over time by the behaviour change programme?
- *Coordination:* Are messages adequately coordinated with service and supply delivery and with other communication activities? Our communication activities taking place on schedule, at the planned frequency?
- *Scope:* Is communication effectively integrated with the necessary range of audiences, issues and services?
- *Quality:* What is the quality of communication (messages, media and channels)
- *Feedback*: Are the changing needs of target populations being captured?

Indications and data on COVID-19 in South Africa show that infections are increasing across all provinces. The only known method of slowing infections depends on how people are behaving towards protecting themselves and those that they come into contact with. The prevention measures provided the Department of Health and government are all dependent on how the public behaves and socialize. In the absence of any therapeutics and vaccines, as a country, we have to ramp up human behaviour change programmes. Studies reviewed by this research indicate that a well planned, well-coordinated, and well-executed change behaviour programme has the potential of reducing infections. The social development sector needs to design and execute a national programme addressing behaviour change against COVID-19. The contribution to managing the pandemic will not only have wanted outcomes, in terms of slowing the infections but also to allow the economy to open and respond to the economic needs of the population.

7. Conclusion

The rapid pace of the COVID-19 pandemic and the social, economic and development destruction faced by the global community is of catastrophic proportion. In a space of 6 months, this pandemic has infected over 13 million people and killed over half a million worldwide. In South Africa, during this period, the county moves from one case in the first week of March 2020 to over 300 000 confirmed cases by the first week of July 2020. The daily numbers of people dying have sharply increased at an alarming rate. With no cure or treatment, coupled with increased daily infections, the numbers of deaths are also expected to increase. It is for this reason that government needs to intensify its COVID-19 prevention strategy.

The literature on behaviour change studies is suggesting a beneficial effect if programme design is based on effective and tested frameworks. There are known and tested frameworks that have been used globally to influence behaviour. These studies also suggest that programme models that can be adapted to suit different environments and settings must underpin these frameworks. Behaviour change programmes are effective if planned and integrated into existing programmes and platforms to minimise fragmentation and cost. There is evidence that effective behaviour change interventions are more likely to be effective if a conducive environment supports them. This may suggest there is a pre-requisite for the sector to have policies, strategies, systems, resources assigned to the behaviour change programme.

There is evidence from literature, that most successful behaviour change programme has followed a programme design that is informed by formative research and the key messages based on findings of the formative research. It also suggests that identification and segmentation of targeted audiences and messages are most likely to influence behaviour positively. The process for developing messages, deploying messages and accessing audiences targeted is important and must be defined at the onset of the programme design.

Given what is known and experienced on the behaviour of COVID-19 pandemic, it is appropriate for governments and the public to initiate and ramp-up behaviour change programmes and the primary solution to contain and limit the impact of COVID-19 on the population and sectors of the economy. The social development sector is well placed to plan and execute national behaviour change initiatives. The sector can mobilise its wide networks of service delivery infrastructure and resources, such as community workers, social workers, health workers and civil society organisations the sector has an opportunity to quickly launch a behaviour change campaign against COVID-19 pandemic. The opportunity window is still open for the sector to respond with a well planned, systematic and structured behaviour change programme and positively contribute to the containment of COVID-19.

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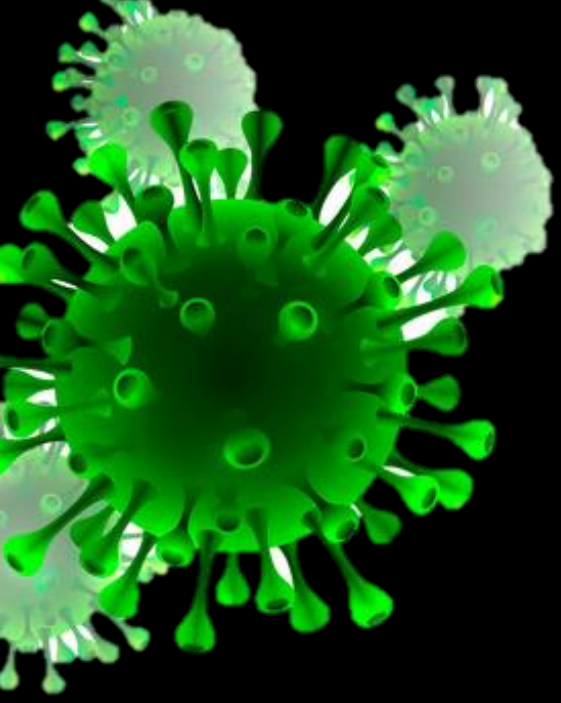

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