

Improving the Quality of Life of Adults With Cancer and Their Family Caregivers in Sub-saharan Africa: Intervention Development

Israel Gabriel (✉ israelchristson@gmail.com)

Griffith University - Logan Campus <https://orcid.org/0000-0002-5663-450X>

Debra Creedy

Griffith University - Logan Campus

Elizabeth Coyne

Griffith University - Logan Campus

Methodology

Keywords:

Posted Date: May 10th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-491570/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background

The evidence for the efficacy of interventions aimed at enhancing the quality of life of cancer patients and/or family members is compelling, but most of the interventions were carried out in high-income countries. Despite high needs that adversely affect the quality of life of people living with cancer and their family caregivers, there is a lack of culturally sensitive interventions for low-income communities. As a result, designing an intervention in resource-poor setting to address the needs and support coping strategies of individuals with cancer and their family caregivers is critical.

Methods

The intervention content and structure were developed using the Capability, Opportunity, and Motivation-Behaviour (COM-B) model for designing evidence-based interventions. A systematic review and quantitative needs assessment of adults with cancer and their family caregivers were previously undertaken. Based on these results, problem was defined, target behaviours were selected and specified, a comprehensive behavioural diagnosis was conducted, and the Taxonomy of Behaviour Change Techniques was used to identify behaviour change techniques and mode of delivery.

Results

Adults with cancer and their family members' needs were addressed through a 120-minute training intervention delivered in a face-to-face group setting, with a four-week follow-up. This intervention incorporates eleven behaviour change techniques of goals and planning; feedback and monitoring; social support; shaping knowledge; natural consequences; comparison of behaviour; associations; repetition and substitution; comparison of outcomes; reward and threat; and self-belief.

Conclusion

A systemic approach was used to explicitly conceptualise an evidence-based and theory-informed intervention tailored to the target population and setting. The proposed intervention addressed previous evidence gaps for the Nigerian user population of adults living with cancer and their family caregivers. Therefore, if implemented and effective, such an intervention has the potential to improve the quality of life of people living with cancer and their families, as well as the intervention's implementation in clinical practice and communities in other low and middle-income countries.

Background

Cancer is becoming a critical public health concern in low and middle income countries (LMICs) due to rising obesity rates, increasingly sedentary lifestyles, dietary influences, excessive tobacco and alcohol use, and recurrent carcinogenic infections such as *Helicobacter pylori*, hepatitis B virus, and human papillomavirus (1). The global cancer burden, morbidity, and mortality is disproportionately higher in LMICs than in high-income countries (HICs), with the LMICs accounting for approximately 81% increase in cancer incidence from 2008 to 2030 (2). Conflicts, poverty, and natural disasters exacerbate the situation, but it is primarily due to socioeconomic and cultural factors that result in late diagnosis, low retention in treatment, and minimal follow-up of cancer survivors (3). The rising cancer burden in LMICs places additional strain on already overburdened healthcare and economic infrastructures, as well as posing unique challenges to this region; as a result, extrapolating cancer experiences from high-income countries (HICs) to LMICs is often inadequate (4). Though individuals living with cancer and their family caregivers in both HICs and LMICs expressed similar needs (5, 6); but those in LMICs expressed these needs in greater numbers (7). Family/social, spiritual, and information needs, for example, may be expressed more in LMICs than in HICs due to socioeconomic challenges and culture (7, 8). These concerns must be addressed by designing a viable and sustainable model of care that addresses the needs of people living with cancer/family caregivers and improve their QoL in resource-poor settings (9).

Brumann, Abu-Lughod (10) define culture as *“forms of traditional behaviour which are characteristic of a given society or of a group of societies, or of a certain race, or of certain area, or of a certain period of time”*. People in LMICs, particularly in Africa, have a diverse set of cultural and religious beliefs that influence their behaviours and perceptions of cancer care (11). As a result, if cancer management in this region is to improve cultures, traditions, and religious beliefs that influence the behaviour of people living with cancer and their families must be a focus of an intervention (12).

There is some evidence, mostly from HICs, that psychosocial interventions have the potential to improve the QoL of people with cancer and/or families (13-15), but most of these interventions lack concepts that are essential to LMICs. Additionally, there is even knowledge gap in applying those interventions in LMICs where the cancer/caregiving burden is highest and the demand for resources is greatest (16).

In addressing these gaps, it is crucial to design an intervention that integrates information, social, spiritual, and cultural beliefs. Therefore, this study aimed to design an evidence-based intervention to improve the QoL of adults living with cancer and their families in Nigeria and Africa in general.

Theory Based Intervention Design

According to the Medical Research Council (MRC), intervention should be based on a specific and consistent underpinning theory (17). The MRC framework is widely regarded as the “gold standard” for developing and evaluating complex interventions, as well as the most widely used set of guidelines in health science (18-21). The MRC framework, on the other hand, lacks depth and direction as a detailed guide for how to develop an intervention. For example, the MRC framework emphasises the importance of using theory in intervention design (17); however, there is no clear guidance on how to select and apply theory. Consequently, Michie, Van Stralen (22) synthesised nineteen frameworks and developed the

Behaviour Change Wheel (BCW), a comprehensive and pragmatic framework for intervention design (BCW).

The BCW has been shown to be extremely effective in developing interventions prior to human clinical trials (23). The BCW is a systematic guide for developing behaviour change interventions that is based on the COM-B. The COM-B model is built around three components: capability, opportunity, and motivation, all of which are necessary to generate or change a behaviour (24). The COM-B model acknowledges that behaviour is part of a broader context that includes a person's or group's capacity (physical and psychological), opportunity (social and physical), as well as motivation (reflective and automatic). According to COM-B, for any behaviour of an individual, or group to occur, there must be: (1) capacity to perform the behaviour, which can be physical (e.g., having the physical skills, or strength) or psychological (e.g., having the knowledge psychological skills, or stamina) (2) the opportunity for the behaviour to occur, which can be physical (for example, environmental factors that allow or promote behaviour, such as time, resources, stimuli, and so on) or social (e.g. opportunity afforded by interpersonal influences, social cues and cultural norms). (3) motivation to perform the behaviour at the relevant time, which can be reflective (e.g., requiring self-aware planning and evaluation) or automatic (e.g., processes involving wants, needs, desires, impulses, and reflex responses) (22, 24).

The BCW has nine intervention functions in the middle ring and seven policy-level strategies in the outer ring. The BCW is used to link influences on behaviour, identified by the COM-B, to potential intervention functions and policy categories (see Figure 1).

Methods

This study describes the development of an intervention up to the point where it is ready to be tested in a randomised controlled trial (RCT), which is currently underway. The RCT was registered with the Pan African Clinical Trial Registry (www.pactr.org, identifier: PACTR202007829295775). The BCW (22) was used to guide intervention development in this study. To design an intervention, the BCW follows eight steps organised into a three-stage process. Figure 2 depicts the three stages of intervention development. The stages are:

Understand the behaviour: This stage entails a behavioural analysis in which the researcher attempts to learn as much as possible about the behaviour that would be targeted by the intervention. This was accomplished by defining the problem, selecting the target behaviours, specifying the target behaviours as clearly as possible; and identifying what needs to change to achieve the target behaviours.

Identify intervention options: After selecting the target behaviours and specifying the desired change in target behaviours, the researcher identified the intervention functions (see middle ring in Figure 1). This provides a matrix that connects each of the COM-B components to the intervention function(s) that are most likely to be effective in changing the target behaviour. Following selection of intervention functions, the supporting policy categories through which to deliver the intervention were identified (see outer ring of Figure 1).

In this stage, the APEASE criteria were used to assist researcher in making decisions about the inclusion of intervention functions and policy categories, ensuring that they are: Affordable, Practical, Effective/Cost-Effective, Acceptable, Safe, and Equitable (APEASE) (22).

Identify content and implementation options: Following stage 2, the researcher used the Behaviour Change Technique Taxonomy (BCTTv1) (25) to identify possible behaviour change techniques (BCTs) that may be more suitable for the intervention functions. The APEASE criteria was used to determine the most widely used BCTs that were connected to each of the selected intervention functions. Researcher IG made initial judgements, which were later reviewed by the other team members DC, EC, to reach an agreement on the final selection.

Finally, the APEASE criteria were used to determine the most effective and realistic modes of intervention delivery. The outcomes, particularly the identified barriers/challenges, influenced the intervention's modes of delivery. Similarly, the APEASE criteria were used by researcher to make suggestions about modes of delivery.

Results

Behavioural diagnosis

The researchers completed a systematic review (14) and quantitative needs survey of adult with cancer and their family caregivers (7) to define the problem, select and specify target behaviour. (see Figure 3) These components provided an in-depth evaluation of the interventions available internationally and within the African continent as well as the ongoing psychosocial/spiritual and information needs impact on the QoL of adult Nigerians living with cancer and their families, and the relationship between the study variables. It was essential to integrate the findings of these two studies to define the problem in behavioural terms.

The systematic review was motivated by the need to assess the characteristics and efficacy of interventions on QoL of adults with cancer and their family caregivers, especially in LMICs such as Nigeria (14). Given the fact that LMICs have high cancer and caregiver burdens, none of the 12 studies included in the systematic review were conducted in LMICs, and interventions tested in HICs may not be appropriate in LMICs for obvious reasons. All the studies included in the systematic review were conducted in HICs. Although cultural and social differences exist between HICs and LMICs, these differences influence how people react to cancer diagnosis and management. As a result, the findings of the systematic review are only partially applicable in this context. In contrast, because participants were recruited based on their direct experience with cancer, either being diagnosed or supporting someone with cancer in Nigeria, the evidence from the quantitative need survey is directly applicable in the current context. Therefore, the evidence provided is primarily relevant to adults with cancer and their family caregivers in Nigeria, and, by extension, the African continent.

The researcher then conducted a survey of adult Nigerians with cancer and family caregivers to determine their needs and the impact on their QoL (7).

A comprehensive behavioural diagnosis was conducted using the COM-B model. The exercise identified all six sources of behaviour change on the BCW (psychological and physical Capability; social and physical Opportunity; and automatic and reflective Motivation) as important targets for the intervention. Table 1 presents the findings of the COM-B model-guided behavioural diagnosis. This provides evidence statements in relation physical capacity, psychological capability, physical opportunity, social opportunity, reflective motivation, and automatic motivation that should be considered when developing the intervention to address the needs and improve the QoL of adult Nigerians living with cancer and their family caregivers.

The evidence statements were used to generate two target behaviours: (1) involvement in socio-spiritual behaviours to increase QoL across the study population, and (2) appropriate knowledge of the disease process and caregiving among adults with cancer and family caregivers.

Intervention functions

The nine intervention functions which can induce change behaviour were identified from the BCW. The APEASE criteria were then used to grade the relevant intervention functions. The criteria are as follows: (1) affordability, (2) practicability, (3) effectiveness and cost-effectiveness, (4) acceptability, (5) side effects/safety, and (6) equity. Two intervention functions (coercion and restriction) were eliminated as they did not meet the APEASE criteria. The following seven intervention functions were therefore selected: education, persuasion, incentivisation, environmental restructuring, training, modelling, and enablement. Details of the evaluation of each intervention function against the APEASE criteria are provided in Table 2.

Behaviour change techniques

Eleven BCTs that best serve the seven intervention functions were selected. After evaluating all 93 BCTs (25), and applying the APEASE criteria to ensure that all relevant BCTs were included, five additional BCTs were identified for inclusion in the intervention. These fifteen BCTs are associated with the following BCT classification: Goals and planning; feedback and monitoring; social support; shaping knowledge; natural consequences; comparison of behaviour; associations; repetition and substitution; comparison of outcomes; reward and threat; and self-belief. Table 3 contains a list of the 11 selected BCTs, their definitions, and descriptions of how they will be operationalised in an intervention.

Mode of delivery

Finally, the BCW recommends considering all possible modes of delivering intervention before settling on the best one for the specific target behaviour, population group, and setting (24). The face-to-face (individual/group) delivery method was considered. Selection was based on the evaluation against the APEASE criteria. The training will be delivered in four sessions of 120 minutes each.

Final intervention

The final intervention content includes information on the need for family/social support and spirituality, communication and building trusting relationships, family/ social support, and spiritual support, understanding strengths and resources of the family building spiritual support. The full training intervention content are:

- Assess baseline health literacy of the disease and caregiving. Discuss results amongst the group.
- Educate about illness and treatments and caregiving according to identified knowledge gaps and misconceptions.
- Discuss communication strategies and how to be assertive to obtain additional information.
- Clearly and concisely communicate and demonstrate a range of possible therapies such as relaxation, massage.
- Ask participants to write down their concerns and fears. Discuss results amongst the group.
- Discuss strategies to promote open communication.
- Brainstorm strategies to enhance mutual support and teamwork.
- Highlight the value of living "here and now" and promote approaches to helping dyad work within the limits of their new limitations.
- Identify family strengths using a short survey. Discuss results amongst the group.
- Social connections; link between the past and present.
- Provide reality-oriented approaches and pragmatic social support – maintain regular and brief interventions.
- Work to address cognitive distortions and devastating behaviours.
- Use reflective writing to deepen insights, reflect on life changes and what is essential in life.
- Discuss the use of spiritual coping with health challenges, especially dealing with those situations that are not in our control.
- Consider what provides a sense of inner peace for the individual.
- Explore the views of each other and come to a new shared understanding.

Additional file 2 describes the full training intervention's content.

Discussion

Within developed countries, there is a significant body of literature that has investigated the effectiveness of psychosocial interventions for people living with cancer and/or family caregivers across the cancer trajectory. However, no research has been conducted for the African continent. The interventions conducted in HICs may not be relevant to Africans because of differences in cultural and belief systems. In studies conducted in United Kingdom and United States of America there are few studies which have focused on non-Caucasian persons with cancer and often sample sizes have a higher percentage of

Caucasian persons (26). There is a need to design interventions that are safe and effective, including the need for clear and detailed evidence of how the intervention was developed for adults living with cancer and family caregivers in LMICs, especially Africa (14) .

This article describes the systemic development of an intervention to meet the needs and improve the QoL of adults living with cancer and their family caregivers in LMICs. Developing effective interventions to improve QoL requires identifying the appropriate behaviour change components that can be put in place to support sustainable behaviour change. To develop our intervention, we used all the steps outlined in the BCW, used the COM-B model and BCTs taxonomy to select the relevant strategies and design the intervention components. A group-based face-to-face intervention was selected that included seven intervention functions (education, persuasion, incentivisation, training, modelling, environmental restructuring, enablement) and 11 BCTs from the following BCT grouping: goals and planning; feedback and monitoring; social support; shaping knowledge; natural consequences; comparison of behaviour; associations; repetition and substitution; comparison of outcomes; reward and threat; and self-belief.

To the best of our knowledge, this is the first African study to use an evidence-based approach to design an intervention to improve the QoL of the study population; this is a major strength of our study. The BCT Taxonomy (Michie et al., 2013) was used to ensure that the content of the intervention was defined in a systematic and consistent manner. At the time this intervention was designed, the researcher was unaware of any other publications that used the BCW to guide development or the BCT to describe and clarify the active content of interventions for people living with cancer and their families.

In addition, we took a systematic and participatory approach to identifying the challenges and facilitators to enhancing QoL, as well as deciding the content and format of our intervention elements, by using these standardised approaches and structured guidance. The advantage of employing an integrative theoretical approach is that it guarantees that all the components for our intervention programme are in position to optimise future benefits. However, there are some limitations. First, we could not have recognised all the possible barriers and enablers for enhancing QoL. Second, while the BCW was universally viewed as strongly optimistic and helpful in guiding the intervention's development, it was not without flaws. The amount of time it took to design an intervention using this approach was one of the major challenges, given that there were nine intervention functions, seven policy categories, and 93 BCTs Taxonomy available for selection.

Conclusions

A mixed approach study was designed to develop an intervention for adult Nigerians living with cancer and their family caregivers to meet social, spiritual, and information needs. The intervention development consists of the phases of needs assessment and intervention development. A feasibility study is currently being conducted on this intervention to assess its acceptability, practicability, implementation, and preliminary effectiveness. If the intervention is deemed feasible and effective, a pilot study to assess its long-term impact on the QoL of the study population is advised.

Abbreviations

COM-B: Capability, Opportunity, and Motivation-Behaviour

LMICs: Low- and middle-income countries

HICs; High-income countries

MRC: Medical Research Council

BCW: Behaviour Change Wheel

RCT: Randomised controlled trial

APEASE: Affordable, Practical, Effective/Cost-Effective, Acceptable, Safe, and Equitable

BCTTv1: Behaviour Change Technique Taxonomy.

Declarations

- Ethics approval: This article contains no human participant. Therefore, ethics is not applicable.
- Consent for publication – Both co-authors have given their permission for this manuscript to be published.
- Availability of data and materials – This article does not account for data sharing since no datasets were generated or analysed during the study. The intervention manual has been submitted for publication as Additional file 2.
- Competing interests – The authors declare that they have no competing interests.
- Funding – The first author is supported by a Griffith University International Postgraduate Research Scholarship.
- Authors' contributions –
- Study design: I.G., D.K.C., and E.C.
- Manuscript writing and revisions for important intellectual content: I.G., D.K.C., and E.C.
- All authors read and approved the final manuscript.
- Acknowledgements – Not applicable.

References

1. Shah, Kayamba, Peek, Heimburger. Cancer Control in Low- and Middle-Income Countries: Is It Time to Consider Screening? *Journal of global oncology*. 2019;5(5):1-8.

2. Fidler MM, Bray F, Soerjomataram I. The global cancer burden and human development: A review. London, England: SAGE Publications; 2018. p. 27-36.
3. Aniebue UU, Onyeka TC. Ethical, socioeconomic, and cultural considerations in gynecologic cancer care in developing countries. *International Journal of Palliative Care*. 2014;2014.
4. List JM, O'Connor JM. How Should Low-and Middle-Income Countries Motivate Equity in Cancer Prevention and Control? *AMA journal of ethics*. 2020;22(2):147-55.
5. Cui J, Song LJ, Zhou LJ, Meng H, Zhao JJ. Needs of family caregivers of advanced cancer patients: a survey in Shanghai of China: Needs of family caregivers of advanced cancer patients. *European Journal of Cancer Care*. 2014;23(4):562-9.
6. Kim H, Yi M. Unmet needs and quality of life of family caregivers of cancer patients in South Korea. *Asia-Pacific journal of oncology nursing*. 2015;2(3):152.
7. Gabriel I, Creedy D, Coyne E. Quality of life and associated factors among adults living with cancer and their family caregivers. *Nursing & health sciences*. 2021.
8. Ndiok A, Ncama B. Assessment of palliative care needs of patients/families living with cancer in a developing country. *Scandinavian journal of caring sciences*. 2018;32(3):1215-26.
9. Kitson AL, Harvey G. Methods to Succeed in Effective Knowledge Translation in Clinical Practice. *Journal of nursing scholarship*. 2016;48(3):294-302.
10. Brumann C, Abu-Lughod L, Cerroni-Long EL, D'Andrade R, Gingrich A, Hannerz U, et al. Why a successful concept should not be discarded. Commentaries. Author's reply: Culture - A second chance? *Current anthropology*. 1999;40:S1-S27.
11. McCutchan G, Weiss B, Quinn-Scoggins H, Dao A, Downs T, Deng Y, et al. Psychosocial influences on help-seeking behaviour for cancer in low-income and lower middle-income countries: a mixed-methods systematic review. *BMJ global health*. 2021;6(2):e004213.
12. Rego F, Gonçalves F, Moutinho S, Castro L, Nunes R. The influence of spirituality on decision-making in palliative care outpatients: a cross-sectional study. *BMC palliative care*. 2020;19(1):1-14.
13. Badger TA, Segrin C, Sikorskii A, Pasvogel A, Weihs K, Lopez AM, et al. Randomized controlled trial of supportive care interventions to manage psychological distress and symptoms in Latinas with breast cancer and their informal caregivers. *Psychology & health*. 2019:1-20.
14. Gabriel I, Creedy D, Coyne E. A systematic review of psychosocial interventions to improve quality of life of people with cancer and their family caregivers. *Nursing open*. 2020.
15. Tan JYS, Lam KFY, Lim HA, Chua SM, Kua EH, Griva K, et al. Post-intervention sustainability of a brief psycho-educational support group intervention for family caregivers of cancer patients. *Asia-Pacific Psychiatry*. 2018;10(3):e12305-n/a.
16. Kusi G, Mensah ABB, Mensah KB, Dzomeku VM, Apiribu F, Duodu PA, et al. The experiences of family caregivers living with breast cancer patients in low-and middle-income countries: a systematic review. *Systematic reviews*. 2020;9(1):1-18.

17. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: following considerable development in the field since 2006, MRC and NIHR have jointly commissioned an update of this guidance to be published in 2019, 2006. Medical Research Council, UK; 2008.
18. Bleijenberg N, de Man-van Ginkel JM, Trappenburg JCA, Ettema RGA, Sino CG, Heim N, et al. Increasing value and reducing waste by optimizing the development of complex interventions: Enriching the development phase of the Medical Research Council (MRC) Framework. *International Journal of Nursing Studies*. 2018;79:86-93.
19. Sino C, Bleijenberg N, Ettema R, Trappenburg JCA, Hafsteinsdóttir T, Heim N, et al. Increasing value and reducing waste by optimizing the development of complex interventions: Enriching the development phase of the Medical Research Council (MRC) Framework. *International Journal of Nursing - Journal Article*. 2018(79):86-93.
20. Bobrow K, Farmer A, Ciske N, Nwagi N, Namane M, Brennan TP, et al. Using the Medical Research Council framework for development and evaluation of complex interventions in a low resource setting to develop a theory-based treatment support intervention delivered via SMS text message to improve blood pressure control. *BMC health services research*. 2018;18(1):33-.
21. Masulani-Mwale C, Kauye F, Gladstone M, Mathanga D. Development of a psycho-social intervention for reducing psychological distress among parents of children with intellectual disabilities in Malawi. *PloS one*. 2019;14(2):e0210855-e.
22. Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*. 2011;6(1):1-12.
23. Gould GS, Bar-Zeev Y, Bovill M, Atkins L, Gruppetta M, Clarke MJ, et al. Designing an implementation intervention with the Behaviour Change Wheel for health provider smoking cessation care for Australian Indigenous pregnant women. *Implementation science : IS*. 2017;12(1):114-.
24. Michie S, Atkins L, West R. *The behaviour change wheel. A guide to designing interventions* 1st ed Great Britain: Silverback Publishing. 2014:1003-10.
25. Michie S, Richardson M, Johnston M, Abraham C, Francis J, Hardeman W, et al. The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. *Annals of behavioral medicine*. 2013;46(1):81-95.
26. Whitehead NE, Hearn LE. Psychosocial interventions addressing the needs of Black women diagnosed with breast cancer: a review of the current landscape. *Psycho-oncology (Chichester, England)*. 2015;24(5):497-507.

Tables

Table 1: Behavioural diagnosis using the COM-B model.

| COM-B component | Behavioural diagnosis |
|--------------------------|---|
| Physical capability | <ul style="list-style-type: none"> ☒ Physical strength is needed to engage in religious and community activities. ☒ A need for physical strength to participate in training and to meet people with similar conditions to share experiences. |
| Psychological capability | <ul style="list-style-type: none"> ☒ Need for socio-spiritual awareness that will dispel myths about cancer and caregiving. ☒ Need knowledge of how best to promote healthy behaviour in adults with cancer and family caregivers |
| Physical opportunity | <ul style="list-style-type: none"> ☒ Adults with cancer and family caregivers need the resources that will meet their needs and thereby improve their quality of life. <p data-bbox="342 848 1403 884">Adults with cancer and family caregivers have limited time for engagement.</p> <ul style="list-style-type: none"> ☒ Adults with cancer and family caregivers need access to safe environment and facilities. ☒ Adults with cancer and their families find ways to overcome any financial and time constraints <p data-bbox="342 1104 875 1140">that prevent them from receiving care.</p> |
| Social opportunity | <ul style="list-style-type: none"> ☒ Adults with cancer and family caregivers need social support from friends and family ☒ During the disease/caregiving journey, adults with cancer and family caregivers need opportunities to engage with friends, relatives, and significant others. ☒ Adequate support from healthcare providers ☒ Family members encouragement is crucial. ☒ Continued maintenance of logistic support from government and society should be encouraged ☒ Social group participation should be encouraged. |
| Reflective motivation | <ul style="list-style-type: none"> ☒ Adults with cancer and family caregivers need to develop a habit getting involve in the community events that will promote their quality of life. ☒ Adults with cancer and family caregivers need to develop plans for daily/weekly activities and <p data-bbox="342 1965 790 2001">develop a habit of participation.</p> |

Automatic
motivation

☒ Adults with cancer and family caregivers need to feel that they want to participate in socio-spiritual activities and that there may be a sense of pleasure or satisfaction from participation.

☒ Family members may feel a sense of duty to set a good example for their cancer-affected loved

one and caregivers, and this may be motivated by a desire to do the best for loved ones.

COM-B = capability, opportunity, and motivation - behaviour.

Table 2: Selection of intervention functions to bring about a change.

| Candidate intervention function | Does the intervention function meet the APEASE criteria? |
|---|---|
| Education | Yes |
| Persuasion | Yes |
| Incentivisation | Yes |
| Coercion | No – not practicable or acceptable. |
| Training | Yes |
| Restriction | No – not practicable as there are no options to restrict in this context. |
| Environmental restructuring | Yes |
| Modelling | Yes |
| Enablement | Yes |
| <p>Definitions: Education, increasing knowledge or understanding; Persuasion, using communication to induce positive or negative feelings or stimulate action; Incentivisation, creating expectation of reward; coercion, creating an expectation of punishment or cost; Training, imparting skills; Restrictions, using rules to reduce the opportunity to engage in the target behaviour; Environmental restructuring, changing the physical or social context; Modelling, providing an example for people to aspire to or imitate; Enablement, increasing means/reducing barriers to increase capability (beyond education) or opportunity (beyond environmental restructuring).</p> <p><i>APEASE = affordability, practicability, effectiveness and cost effectiveness, acceptability, side-effects and safety, and equity.</i></p> | |

Table 3: Selected behaviour change techniques for the intervention.

Behaviour Change Techniques (code)

Definition

Intervention strategy

Goals and planning:

Goal setting (behaviour) (1.1)

Set or agree on a goal defined in terms of the behaviour to be achieved.

The goal is to successfully address the social, spiritual, and information needs and improve the quality of life of adults living with cancer and their family caregivers and strengthen their knowledge and skills to mobilise social networks.

Adults with cancer and family caregivers will be asked to identify challenges to achieving the target behaviours. Participants will then discuss how they could resolve these challenges.

Problem solving/coping planning (1.2)

Analyse, or prompt the person to analyse, factors influencing the behaviour and generate or select strategies that include overcoming barriers and/or increasing facilitator.

Adults with cancer and family caregivers will report a range of changes in knowledge (increasing knowledge and developing a broader concept of health and gaining better understanding about cancer and caregiving), attitudes (paying more attention to health, attaining better quality of life and confidence, and feeling more relaxed), and behaviour (actively participating, increasing socio-spiritual activities, and improving patient-caregiver/family communication).

Goal setting (outcome) (1.3)

Set or agree on a goal defined in terms of a positive outcome of wanted behaviour.

All participants (adults with cancer and family caregivers) will be encouraged to engage with one another.

Family caregivers will be asked to plan how they will support their loved ones each week by scheduling specific actions.

Participants will be asked to track their activities throughout the

intervention. Mid-training adjustments may need to be made if it appears that many of the participants have not understood the material, appear bored, or need additional help with concepts or skills.

Action planning (including implementation intentions) (1.4)

| | |
|---|---|
| <p>Prompt detailed planning of performance of the behaviour</p> <p><i>Review behaviour goal(s) (1.5)</i></p> <p>Review behaviour goal (s) jointly with the person and consider modifying goal (s) or behaviour change strategy in light of achievement.</p> | |
| <p>Feedback and monitoring:</p> <p><i>Feedback on behaviour (2.2)</i></p> <p>Monitor and provide informative or evaluative feedback on performance of the behaviour.</p> | <p>Quantitative method will be used within the design of an evaluation. The efficacy of intervention on outcomes (spiritual needs, social needs, information needs, and quality of life) will be measured (pre – post, intra and inter group comparison) using standard surveys.</p> |
| <p>Social support:</p> <p><i>Social support (general) (3.1)</i></p> <p>Advise on, arrange, or provide social support or non- contingent praise or reward for performance of the behaviour.</p> | <p>Provide details about a self-help group that can help with the behaviour. Ask adults with cancer to always bring a relative or a friend to their medical appointments. Ask family caregivers to seek support if they feel stressed as a result of caregiving.</p> |
| <p>Shaping knowledge:</p> <p><i>Instruction on how to perform a behaviour (4.1)</i></p> <p>Advise or agree on how to perform the behaviour (includes 'Skills training)</p> | <p>Encourage participants to read spiritual writings, such as the Bible, Koran, or other faith-based texts. Seek the assistance of others; for example, you could initiate an ongoing dialogue with your clergy or counsellor, or you could join a community for meditation, prayer, and support, as well as listening to classical or spiritual music.</p> |
| <p>Natural consequences:</p> <p><i>Information about health consequences (5.1)</i></p> | <p>Explain that failing to keep a medical appointment or refusing treatment will result in metastasis. In addition, failing to take sufficient rest and taking on too many tasks will raise the stress of caregiving.</p> |

| | |
|---|---|
| <p>Provide information (e.g., written, verbal, visual) about health consequences of performing the behaviour.</p> | |
| <p>Comparison of behaviour:</p> <p><i>Demonstration of the behaviour (6.1)</i></p> <p>Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g., via film, pictures, for the person to aspire to or imitate.</p> | <p>Demonstrate your ability to collaborate with families to gain their support. Request that the participant use socio-spiritual intervention to raise awareness and skills among patients/family caregivers.</p> <p>After the group of three or four has had a chance to role-play, ask the wider audience to reflect on their performance. What did each of them do well? Was this a realistic situation? How can you support an individual by providing advice to improve their ways of working with families?</p> |
| <p>Associations:</p> <p><i>Prompts/cues (7.1)</i></p> <p>Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour.</p> | <p>Participants will receive text messages or phone call to remind them to perform their take home tasks. These prompts will strengthen other BCTs by reminding participants of the importance of maintaining medical appointments and taking medicine as prescribed (5.1), inspiring participants to interact with other people (3.1), and generating strategies for overcoming barriers (1.2)</p> |
| <p>Repetition and substitution:</p> <p><i>Behavioural rehearsal/practice (8.1)</i></p> <p>Prompt practice or rehearsal of the performance of the behaviour one or more times in a context or at a time when the performance may</p> | <p>Encourage participants to attend social or religious community meetings on a regular basis. The caregiver who has a chronic condition, such as hypertension or diabetes, must follow medical advice and closely track blood and sugar levels.</p> |
| <p>Comparison of outcomes:</p> <p><i>Persuasive argument (9.1)</i></p> <p>Present verbal or visual communication from a</p> | <p>Present videos of facilitators elaborating on core concepts of socio-spiritual intervention. Show participants a compelling video clip of other cancer patients addressing their cancer journey and caregiving, including communication, cohesion, and so on within the family unit.</p> |

| | |
|--|---|
| <p>credible source in favour of or against the behaviour.</p> | |
| <p>Reward and threat:</p> <p><i>Social reward (10.4)</i></p> <p>Arrange verbal or non-verbal reward if and only if there has been effort and/or progress in performing the behaviour (includes 'Positive reinforcement')</p> | <p>Show participants that you appreciate their contributions by saying things such as, "That's a good point," "Thank you for bringing that up,"</p> <p>Congratulate participants on completing each training session.</p> |
| <p>Self-belief:</p> <p><i>Verbal persuasion to boost self-efficacy (15.1)</i></p> <p>Tell the person that they can successfully perform the wanted behaviour, arguing against self-doubts and asserting that they can and will succeed.</p> | <p>Tell the person that they can successfully perform the wanted behaviour, arguing against self-doubts and asserting that they can and will succeed"</p> |

Figures

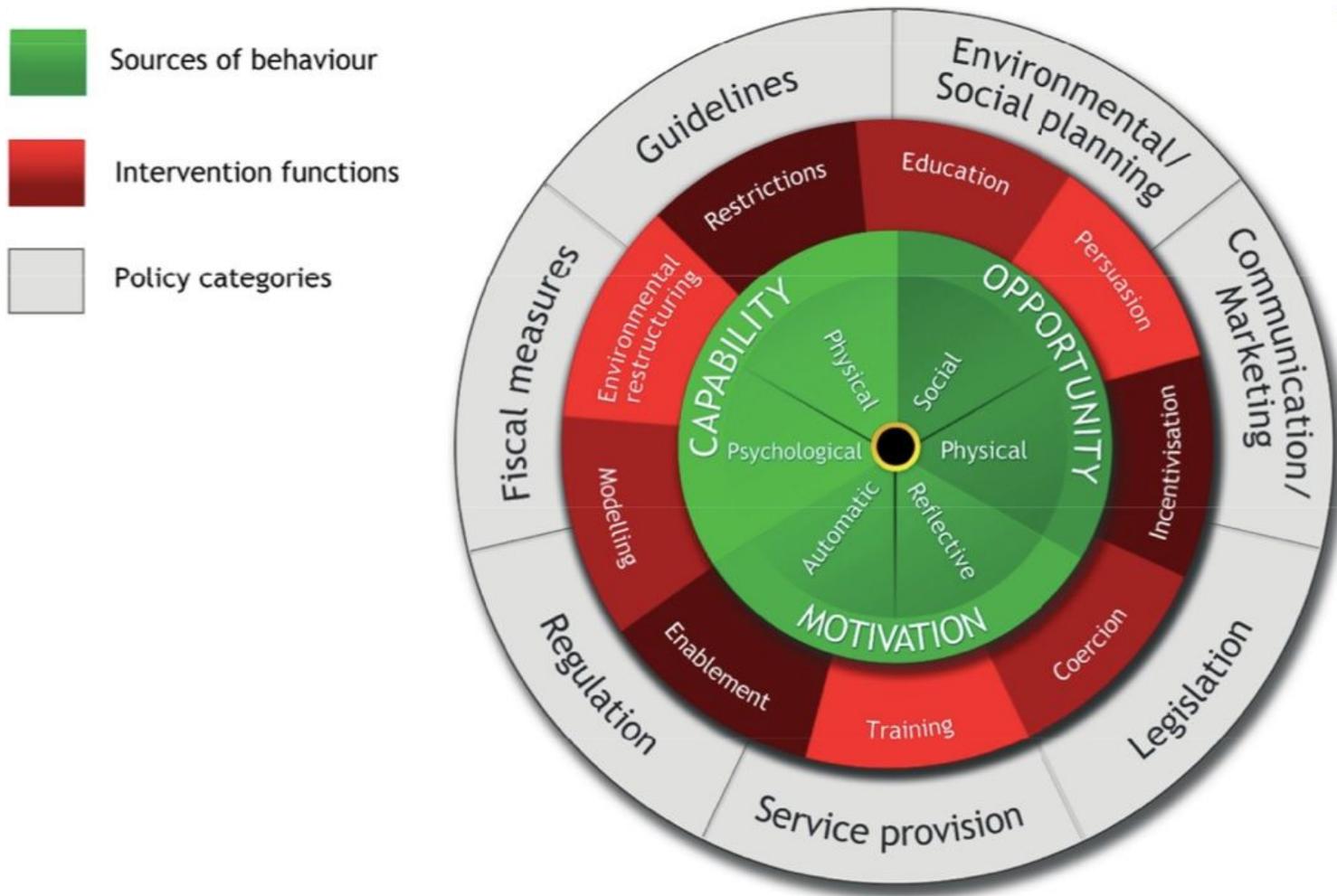


Figure 1

The Behaviour Change Wheel Framework

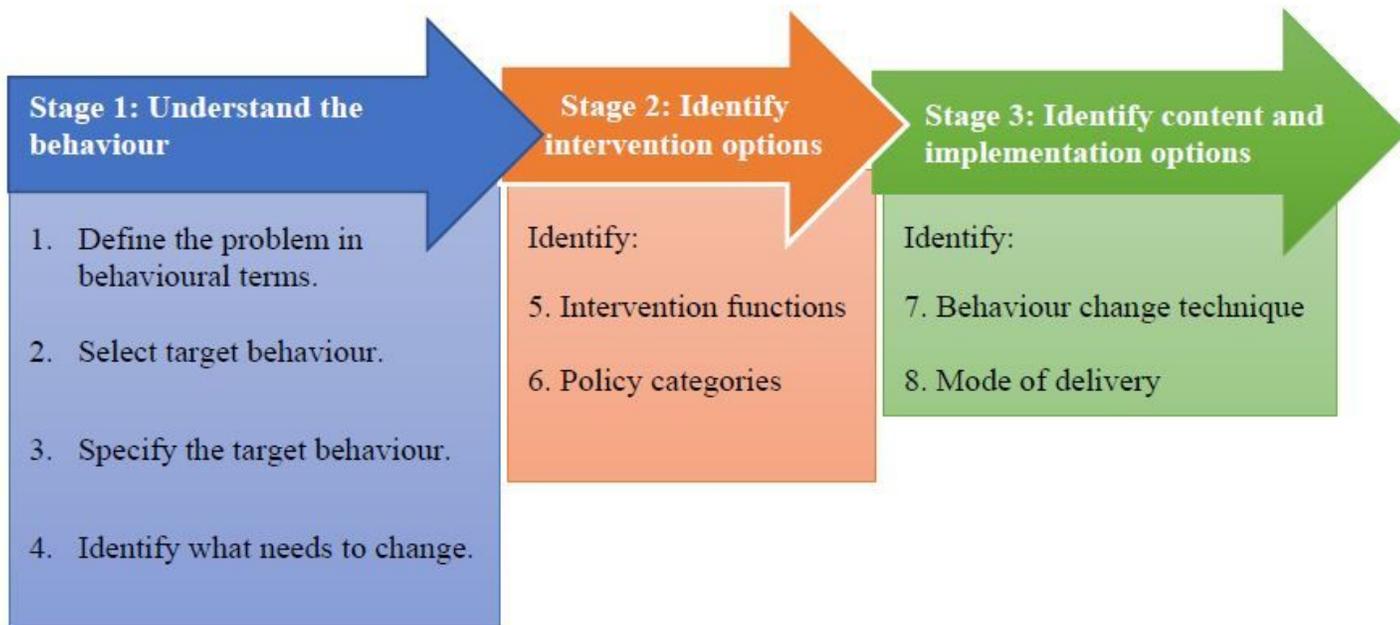


Figure 2

BCW stages process for intervention design

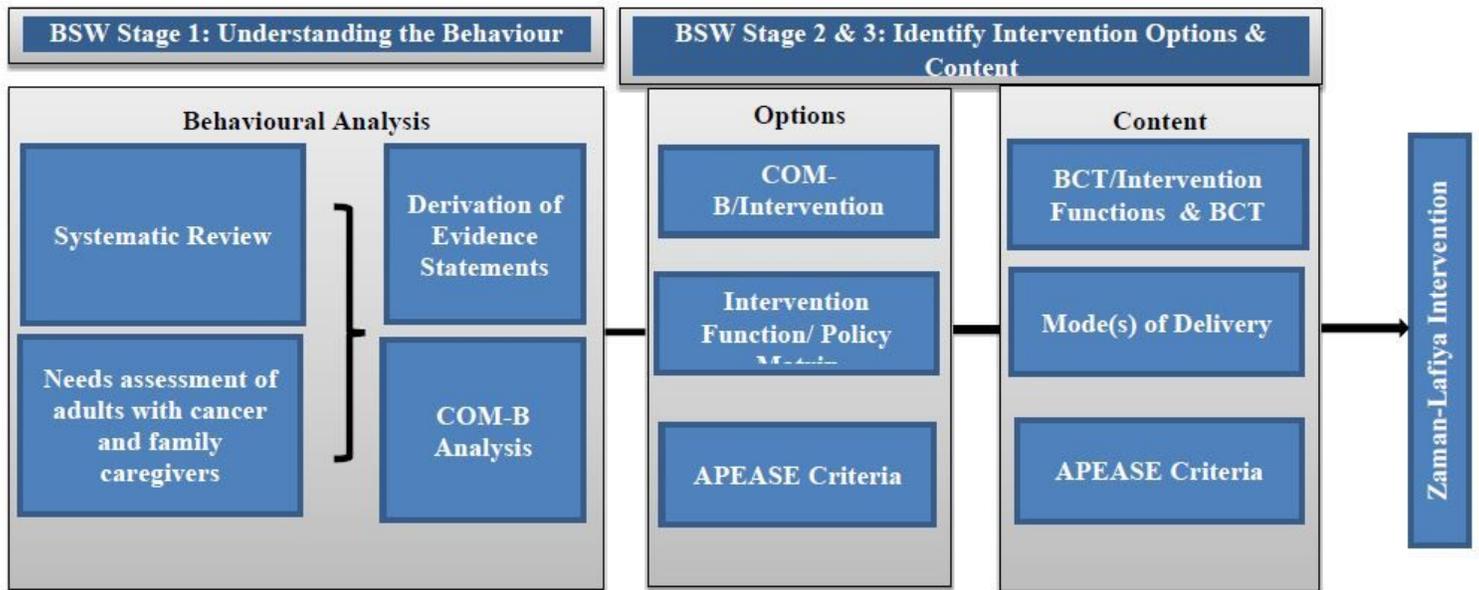


Figure 3

Intervention Design

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [TIDieRChecklistFILE1.pdf](#)