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The effect of social media interventions on the education and communication among patients with cancer: A study protocol of a systematic review

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Abstract

Introduction Cancer is a leading cause of death in the worldwide. In addition, accounting for approximately 10 million deaths in 2020 alone. Information and communication technologies (ICT) have great potential for improving health education and communication. One of the technologies that can help cancer patients and healthcare providers for communicating and providing educational information is social media. Social media are increasingly being used for health promotion and behavior change. This is a protocol of systematic review to identify the effect of social media interventions on the education and communication among patients affected by any type of cancer. The aim of this study is to reveal the steps of conducting research which review all studies for the specific objective systematically. Their studies objective is to examine the social media interventions on improving awareness and knowledge about the disease for patients with cancer and better communications among them.

Methods and analysis This protocol is reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist. We will include any types of observational or experimental design studies that report on the effect of social media interventions on the education and communication among patients with any type of cancer or malignancy and any stage of disease. Interventions will be inclusive using of all social network platforms for patients' communication and education. We will search PubMed, Web of Science, Scopus, and the Cochrane Library from inception until 23 May 2022. Two independent reviewers will screen titles, abstracts and full-text articles with conflicts resolved through discussion or by a third reviewer, as needed. All titles, abstracts, and full-text articles will be reviewed independently by two reviewers according to the inclusion and exclusion criteria. Discrepancies will resolve by discussion or S.R.N.K if needed. The two reviewers will also independently complete risk of bias assessments for each included study. Based on the study's variables, the descriptive analysis including frequency and percentage parameters will be calculated. Furthermore, we will report the results of the quality assessment of studies in table format. In the result section, a narrative synthesis will be applied to describe and compare the paper's results.

Ethics and dissemination As this is a systematic review, ethical approval for conduct of this study is not required. We will pursue publication of study results in a relevant peer-reviewed journal and report our findings according to the PRISMA checklist.

Trial registration number CRD42022334691.

Strengths and limitations of this study

- No previous systematic reviews to investigate the effect of social media intervention on the education and communication among patients affected by any type of cancer exist.
- This will be the most up-to-date and comprehensive systematic review as it relates to social media interventions on the education and communication among patients affected by any type of cancer.
- The review will undertake a rigorous selection process with screening of articles and risk of bias assessment for each study to be conducted by two independent reviewers and a third reviewer to resolve conflicts if necessary.
- The review will be limited to papers published in English language and may will be missed relevant studies published in other languages which could have influenced the overall findings.

1- Introduction

According to World Health Organization (WHO), cancer is a leading cause of death in the worldwide. In addition, accounting for approximately 10 million deaths in 2020 alone (1). The most common types of cancer include breast, lung, colorectal, prostate, skin (non-melanoma), and stomach (1, 2). Due to limited resources contribute to the cancer, it is important to raise awareness, knowledge, and understanding of patients about cancer (3-5).

It has been over a decade since the Institute of Medicine (IOM) first recommended that patients should have an active role in their health care (6). Information and communication technologies (ICT) have great potential for improving health education (7). Technology also has redefined the way patients and providers communicate and obtain health information (8). One of the technologies that can help cancer patients and healthcare providers for communicating and providing educational information is social media (9). The number of social media users has increased significantly in the past decade and social media have many opportunities and benefits for health care (10). Social media are widespread web-based or mobile-based platforms that allow individuals to connect with others within a virtual network that they can create, share or exchange various forms of digital content in various formats such as messages, information, photos, and videos (11). Social media tools and platforms such as Facebook and Twitter can provide an important role for public health promotion (12, 13). They help patients for communication with each other and healthcare professionals and sharing health information and experiences about diseases prevention, symptoms, and treatment (10, 12, 14). In addition, they provide emotional and social support for cancer patients and their healthcare providers (15). A collaborative and interactive relationship between patients together and patients with healthcare professionals is considered an important element for patient empowerment, and illness management (16). Social media, due to the ability of sharing the educational content, may improve knowledge or awareness of health topics or motivate cancer patients' behavior change (12). Social media can facilitate the process of education and communication with patients affected by cancer and health care providers. In addition, its leads to saving time and cost (17).

Although systematic reviews were conducted for education (18-21) and communication (22-26) with cancer patients, no systematic review is available to investigate the effect of social media intervention on these specific outcomes. This is the first protocol for a systematic review to identify the effect of social media interventions on the education and communication among patients affected by any type of cancer.

2- Methods and analysis

2-1- Study design and registration

This systematic review protocol was written and reported according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist (27). The protocol of this systematic review is registered in the PROSPERO database (CRD42022334691).

2-2 Eligibility criteria

2-2-1- PICO framework

We will use the population, intervention, comparators, and outcomes (PICO) framework for the purpose of this systematic review to clearly define the different components of this review and to aid in study selection.

Population:

- Patients with any type of cancer or malignancy and any stage of disease.

Intervention:

- Using of all social network platforms for patients' communication and education.

Comparison:

- Patients receiving the same sort of intervention with social media and other ways of education and communication.
- Some studies will have no comparison or comparator intervention.

Outcome:

- Education-related outcomes, including awareness, and knowledge improvement.
- Communications related outcomes, such as communication with family members, healthcare providers, same cancer-affected patients, and other stakeholders.

2-2-2- Further inclusion criteria:

1. Original research papers and proceeding papers;
2. Full text available;
3. Studies with observational or experimental design;
4. Studies with English language;
5. No limitation regarding date of publication;
6. Studies focused on the social media for education and communication of cancer patients;

2-2-3- Exclusion Criteria:

1. Reviews, meta-analysis, dissertation theses, reports, conference abstracts, letter to editor, commentaries or protocols;
2. Papers written in languages other than English;
3. Full-text of papers were not available;

4. The studies with not enough statistical details regarding the effect of social media of education and communication of cancer patients.
5. Papers without relevant outcomes (social media of education and communication of cancer patients);

2-3- Information sources

We will conduct a systematic search in electronic databases including PubMed, Web of Science, Scopus, and the Cochrane Library from inception until 23 May 2022. In addition, we will search in Google Scholar to identify gray literature. No restriction related to date of publication will be applied. Reference lists of included articles will also be hand-searched.

2-4- Search strategy

We will use a combination of keywords and MeSH terms depending on the database to capture the following concepts: cancer, social media, and education & communication. An example of the search strategy for the PubMed database, composed of #1 AND #2 AND #3 will be used as a search strategy in #4, shown in Table 1.

Table 1. PubMed database strategy search

Number	Search Strategy
#1	((((((((((("Social Media"[Mesh]) OR ("Social Networking"[Mesh])) OR ("social media*"[Title/Abstract])) OR ("Social network*"[Title/Abstract])) OR ("social medium"[Title/Abstract])) OR ("social network site*"[Title/Abstract])) OR ("social networking site*"[Title/Abstract])) OR ("Online social network*"[Title/Abstract])) OR (Online social site* [Title/Abstract])) OR ("online communit*"[Title/Abstract])) OR ("virtual communit*"[Title/Abstract])) OR ("online forum*"[Title/Abstract])) OR (SNA[Title/Abstract])
#2	(((((("Neoplasms"[Mesh]) OR ("cancer*"[Title/Abstract])) OR ("tumour*"[Title/Abstract])) OR ("tumor*"[Title/Abstract])) OR ("neoplasm*"[Title/Abstract])) OR ("neoplas*"[Title/Abstract])) OR ("carcinoma*"[Title/Abstract])) OR ("malignan*"[Title/Abstract])
#3	"Education"[MeSH Terms] OR "education*"[Title/Abstract] OR "train*"[Title/Abstract] OR "teach*"[Title/Abstract] OR "learn*"[Title/Abstract] OR "Communication"[MeSH Terms] OR "communicat*"[Title/Abstract] OR "electronic communication*"[Title/Abstract]
#4	#1 AND #2 AND #3

2-5- Study selection

The results of the searches will be entered into an EndNote library and duplicates will be removed. Two authors (A.B.Y, S.H.S) independently will assess and screen study eligibility and will be involved in study selection. All titles, abstracts, and full-text articles will be reviewed independently by A.B.Y, and S.H.S according to the inclusion and exclusion criteria. Discrepancies will be resolved by discussion. In case of disagreement among the authors, S.R.N.K will available for arbitration.

2-6- Data extraction

We will use a piloted data collection form in Excel (Microsoft, 2019) extract data from included studies. The two reviewers (A.B.Y, and S.H.S) will perform data extraction independently with discrepancies resolved by discussion or a third reviewer (S.R.N.K).

This form will include the following characteristics from each study, when available:

- **General information:** Title, authors, date of publication, country/geographical area, aim of study, study design, journal title, and other details.
- **Participants:** sample size, age, gender, ethnicity, type of cancer and stage.
- **Intervention:** type of intervention (education or communication or both), social media platform, methods of intervention (message, video, image, audio, and etc.), comparison method to intervention, intervention duration, treatment steps (surgery, radiation, chemotherapy, and others).
- **Outcomes:** related measuring indicators for communication and education of cancer patients by social media intervention.

2-7- Outcomes

In this study, education and communications outcomes through their related measuring indicators will be considered.

2-8- Assessment of Bias

The risk of bias for the articles selected for this review will be assessed with the following quality checking instruments: Cochrane Risk of Bias tool for randomized controlled trials (RCTs) and non-randomized controlled trials (NRCTs), Newcastle-Ottawa Scale (NOS) for Cohort and Case-Control Studies (before-after studies), respectively (28). The risk of bias assessment will be independently completed for each study by two reviewers (A.B.Y, S.H.S). Discrepancies will resolve by discussion or S.R.N.K if needed. The Robvis tool will use to create a risk of bias plot (29).

2-9- Data synthesis and analysis

Based on the study's variables, the descriptive analysis including frequency and percentage parameters will be calculated and in the frame of graphs and tables presented. Furthermore, we will report the results of the quality assessment of studies in table format. In the result section, a narrative synthesis will be applied to describe and compare the paper's results, and meta-analysis is not the aimed of this systematic review due to the diversity of outcomes and results.

3- Discussion

The proposed systematic review will identify the effect of social media interventions on the education and communication among patients affected by any type of cancer. Several studies have been conducted in the field of education and communication for cancer patients. However, their focus has not been on social media. For example, Howell et al reported on the effect of self-management education interventions for patients with cancer (18). Hong et al reported on identifying the existing digital interventions to improve patient-provider communication among cancer patients (23). Our review will include patients with any type of cancer or malignancy and any stage of disease, and using of all social network platforms for patients' education and communication. To the best of our knowledge, there has not been any systematic review on the effects of social media interventions on the education and communication among patients with cancer. This will be the most comprehensive and up-to-date systematic review as it relates to social media interventions on the education and communication among patients affected by any type of cancer.

The evaluation of this systematic review will be divided into four sections: identification, study inclusion, data extraction and data synthesis. The review will be limited to the English language, which may result in exclusions of potentially relevant studies published in other languages. To minimize any selection bias regarding the studies that get included in the review, we will use two independent reviewers to conduct the screening and a third reviewer to resolve conflicts.

Acknowledgements

The authors thank all the participants in the study.

Authors' Contributions

A.B.Y, S.H.S and S.R.N.K conceived the idea for the review. A.B.Y, S.H.S and S.R.N.K were involved in the study selection, quality assessment, and data extraction. H.B, and H.M conducted the statistical analysis. A.B.Y, S.H.S, S.R.N.K, and E.A wrote the first draft of the manuscript and all authors revised it. All authors reviewed the manuscript, contributed to critical changes, and approved the final version of the manuscript for submission.

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Declarations

Ethical approval and consent to participate

Not applicable.

Patient consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Primary Subject Heading:	Communication
Secondary Subject Heading:	Oncology, Medical education and training
Keywords:	Health informatics < BIOTECHNOLOGY & BIOINFORMATICS, Information management < BIOTECHNOLOGY & BIOINFORMATICS, Information technology < BIOTECHNOLOGY & BIOINFORMATICS, EDUCATION & TRAINING (see Medical Education & Training)

The effect of social media interventions on the education and communication among patients with cancer: a systematic review protocol

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Abstract

Introduction Cancer is a leading cause of death worldwide. In addition, it accounted for approximately 10 million deaths in 2020 alone. Information and communication technologies (ICT) have great potential for improving health education and communication. Social media is one of the technologies that can help cancer patients and healthcare providers communicate and provide educational information. Social media are increasingly being used for health promotion and behavior change. This is a protocol of systematic review to identify the effect of social media interventions on the education and communication among patients affected by cancer. This study aims to reveal the steps of conducting research that systematically reviews all studies for the specific objective. This study aims to examine the social media interventions to improve awareness and knowledge about the disease for cancer patients and improve communication among them.

Methods and analysis This protocol is reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist. We will include experimental design studies that report the effect of social media interventions on education and communication among patients with cancer or malignancy and any stage of the disease. Interventions will be inclusive, using all social network platforms for patients' communication and education. We will search PubMed, Web of Science, Scopus, and the Cochrane Library from inception until 23 May 2022. Two independent reviewers will screen titles, abstracts, and full-text articles with conflicts resolved through discussion or by a third reviewer, as needed. All titles, abstracts, and full-text papers will be reviewed independently by two reviewers according to the inclusion and exclusion criteria. Discrepancies will resolve by discussion or S.R.N.K if needed. The two reviewers will also independently complete risk of bias assessments for each included study. The descriptive analysis, including frequency and percentage parameters, will be calculated based on the study's variables. Furthermore, we will report the results of the quality assessment of studies in table format. In the result section, a narrative synthesis will be applied to describe and compare the paper's results.

Ethics and dissemination Ethics approval will not be needed because the data to be used in this systematic review and meta-analysis will be extracted from published studies. It will be disseminated by publication in a peer-reviewed journal.

PROSPERO registration number CRD42022334691.

Strengths and limitations of this study

- To the best of our knowledge, no previous systematic reviews to investigate the effect of social media intervention on education and communication among patients affected by any type of cancer exist.
- We will conduct a systematic search in valid electronic databases, including PubMed, Web of Science, Scopus, and the Cochrane Library.
- We will consider patients with any type of cancer or malignancy and any stage of the disease.
- We will consider all social network platforms for patients' communication and education.
- This study will be limited to the English language.

1- Introduction

According to World Health Organization (WHO), cancer is a leading cause of death worldwide. In addition, accounting for approximately 10 million deaths in 2020 alone (1). The most common types of cancer include breast, lung, colorectal, prostate, skin (non-melanoma), and stomach (1, 2). Due to limited resources contributing to cancer, it is essential to raise awareness, knowledge, and understanding of patients about cancer (3-5).

It has been over a decade since the Institute of Medicine (IOM) first recommended that patients should have an active role in their health care (6). Information and communication technologies (ICT) have great potential for improving health education (7). Technology also has redefined the way patients and providers communicate and obtain health information (8). Social media is one of the technologies that can help cancer patients and healthcare providers communicate and provide educational information (9). The number of social media users has increased significantly in the past decade, and social media have many opportunities and benefits for health care (10). Social media are widespread web-based or mobile-based platforms that allow individuals to connect with others within a virtual network where they can create, share or exchange digital content in various formats, such as messages, information, photos, and videos (11). Social media tools and platforms such as Facebook and Twitter can be essential in public health promotion (12, 13). They help patients communicate with each other and healthcare professionals and share health information and experiences about disease prevention, symptoms, and treatment (10, 12, 14). In addition, they provide emotional and social support for cancer patients and their healthcare providers (15). A collaborative and interactive relationship between patients together and patients with healthcare professionals is considered an essential element for patient empowerment and illness management (16). Due to the ability to share educational content, social media may improve knowledge or awareness of health topics or motivate cancer patients' behavior change (12). Social media can facilitate the process of education and communication with patients affected by cancer and health care providers. In addition, its leads to saving time and cost (17).

Although systematic reviews were conducted for education (18-21) and communication (22-26) with cancer patients, no systematic review is available to investigate the effect of social media intervention on these specific outcomes. This is the first protocol for a systematic review to identify the impact of social media interventions on education and communication among patients affected by any cancer.

2- Methods and analysis

2-1- Study design

This systematic review protocol was written and reported according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist (27).

2-2 Eligibility criteria

2-2-1- PICO framework

We will use the population, intervention, comparators, and outcomes (PICO) framework for this systematic review to clearly define this review's different components and aid in study selection.

Population:

- Patients with any type of cancer or malignancy and any stage of the disease.

Intervention:

- Using all social network platforms for patients' communication and education.

Comparison:

- Patients receive the same sort of intervention with social media and other ways of education and communication.
- Some studies will have no comparison or comparator intervention.

Outcome:

- Education-related outcomes, including awareness and knowledge improvement.
- Communications-related outcomes, such as communication with family members, healthcare providers, same cancer-affected patients, and other stakeholders.

2-2-2- Further inclusion criteria:

1. Original research papers and proceeding papers;
2. Full text available;
3. Any experimental study (randomized controlled trial or quasi-experimental with pre/post design);
4. Studies with English language;
5. No limitation regarding date of publication;
6. Studies focused on the social media for education and communication of cancer patients;

2-2-3- Exclusion Criteria:

1. Reviews, meta-analysis, dissertation theses, reports, conference abstracts, letter to editor, commentaries or protocols;
2. Papers written in languages other than English;
3. Full-text of papers were not available;
4. The studies with not enough statistical details regarding the effect of social media of education and communication of cancer patients.

5. Papers without relevant outcomes (social media of education and communication of cancer patients);

2-3- Information sources

We will conduct a systematic search in electronic databases, including PubMed, Web of Science, Scopus, and the Cochrane Library, from inception until 23 May 2022. No restriction related to the date of publication will be applied. Reference lists of included articles will also be hand-searched.

2-4- Search strategy

We will use a combination of keywords and MeSH terms depending on the database to capture the following concepts: cancer, social media, and education & communication. An example of the search strategy for the PubMed database, composed of #1 AND #2 AND #3, will be used as a search strategy in #4, shown in Table 1.

Table 1. PubMed database strategy search

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#1	((((((((((("Social Media"[Mesh]) OR ("Social Networking"[Mesh])) OR ("social media*"[Title/Abstract])) OR ("Social network*"[Title/Abstract])) OR ("social medium"[Title/Abstract])) OR ("social network site*"[Title/Abstract])) OR ("social networking site*"[Title/Abstract])) OR ("Online social network*"[Title/Abstract])) OR (Online social site* [Title/Abstract])) OR ("online communit*"[Title/Abstract])) OR ("virtual communit*"[Title/Abstract])) OR ("online forum*"[Title/Abstract])) OR (SNA[Title/Abstract])
#2	(((((("Neoplasms"[Mesh]) OR ("cancer*"[Title/Abstract])) OR ("tumour*"[Title/Abstract])) OR ("tumor*"[Title/Abstract])) OR ("neoplas*"[Title/Abstract])) OR ("carcinoma*"[Title/Abstract])) OR ("malignan*"[Title/Abstract])
#3	"Education"[MeSH Terms] OR "education*"[Title/Abstract] OR "train*"[Title/Abstract] OR "teach*"[Title/Abstract] OR "learn*"[Title/Abstract] OR "Communication"[MeSH Terms] OR "communicat*"[Title/Abstract] OR "electronic communication*"[Title/Abstract]
#4	#1 AND #2 AND #3

2-5- Study selection

The results of the searches will be entered into an EndNote library, and duplicates will be removed. Two authors (A.B.Y, H.S) will independently assess and screen study eligibility and be involved in study selection. All titles, abstracts, and full-text articles will be reviewed independently by A.B.Y and H.S according to the inclusion and exclusion criteria. Discrepancies will be resolved by discussion. In case of disagreement among the authors, S.R.N.K will be available for arbitration.

2-6- Data extraction

We will use a piloted data collection form in Excel (Microsoft, 2019) to extract data from included studies. The two reviewers (A.B.Y and H.S) will perform data extraction independently, with discrepancies resolved by discussion or a third reviewer (S.R.N.K).

This form will include the following characteristics from each study, when available:

- **General information:** Title, authors, date of publication, journal title, country/geographical area, aim of study, and study design.
- **Participants:** sample size, age, gender, ethnicity, type of cancer and stage.
- **Intervention:** type of intervention (education or communication or both), social media platform, methods of intervention (message, video, image, audio, and etc.), comparison method to intervention, intervention duration, treatment steps (surgery, radiation, chemotherapy).
- **Outcomes:** related measuring indicators for communication and education of cancer patients by social media intervention.

2-7- Outcomes

In this study, education and communications outcomes through their related measuring indicators will be considered.

2-8- Assessment of Bias

The risk of bias for the articles selected for this review will be evaluated by two independent appraisers (A.B.Y and H.S) using the Joanna Briggs Institute (JBI) critical appraisal checklists for randomized controlled trials (RCTs) and quasi-experimental studies (28). The JBI critical appraisal checklist for RCTs includes 13 items to assess randomization, allocation concealment, baseline outcomes, blinding (participants/deliverers/assessors), follow-up and drop-out, indicators, reliability of assessment tools, study design, and statistical methods. The 9-item JBI critical appraisal checklist for quasi-experimental studies includes selection bias, information on the control group, outcome assessment, and statistical analysis. Each item will be evaluated using four responses: yes, no, unclear, and not applicable. More 'yes' responses on the appraisal items will be indicated a superior quality study. The criteria will be used to rank the risk of bias, including i) ≤49% = high risk of bias; ii) 50% to 69% = Moderate risk of bias; iii) above 70% = low risk of bias. In case of disagreement, the two reviewers consulted a third reviewer (S.R.N.K) to reach a consensus.

2-9- Data synthesis and analysis

Based on the study's variables, the descriptive analysis, including frequency and percentage parameters, will be calculated and presented in the frame of graphs and tables. Furthermore, we will report the results of the quality assessment of studies in table format. In the result section, a narrative synthesis will be applied to describe and compare the paper's results. Meta-analysis is not the aim of this systematic review due to the diversity of outcomes and results.

2-10- Patient and Public Involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

2-11- Ethics and dissemination

Ethics approval will not be needed because the data to be used in this systematic review and meta-analysis will be extracted from published studies. It will be disseminated by publication in a peer-reviewed journal.

3- Discussion

The proposed systematic review will identify the effect of social media interventions on education and communication among patients affected by any cancer. Several studies have been conducted in the field of education and communication for cancer patients. However, their focus has not been on social media. For example, Howell et al. reported on the effect of self-management education interventions for patients with cancer (18). Hong et al. reported identifying the existing digital interventions to improve patient-provider communication among cancer patients (23). Our review will include patients with any cancer or malignancy and any stage of disease and the use of all social network platforms for patients' education and communication. To the best of our knowledge, there has not been any systematic review of the effects of social media interventions on education and communication among patients with cancer. This will be the most comprehensive and up-to-date systematic review as it relates to social media interventions on the education and communication among patients affected by any cancer.

The evaluation of this systematic review will be divided into four sections: identification, study inclusion, data extraction, and data synthesis. The review will be limited to the English language, which may result in exclusions of potentially relevant studies published in other languages. To minimize selection bias regarding the studies included in the review, we will use two independent reviewers to conduct the screening and a third reviewer to resolve conflicts.

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Authors' Contributions

A.B.Y, S.R.N.K and H.S conceived the idea for the review. A.B.Y, S.R.N.K and H.S wrote the protocol. H.B, H.M and E.A critically appraised the protocol and contributed to its development by revising different versions. All authors read and approved the final version of the manuscript for submission.

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Patient consent for publication

Not required.

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