ROLE OF SOCIAL MEDIA IN PROMOTING POSITIVE HEALTH BEHAVIOUR IN YOUNG PEOPLE

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS-

FB- Facebook

CDC- Centres for Disease Control and Prevention

GUADS- Get Up and Do Something

HBCI- Health Behaviour Change Intervention

PA- Physical Activity

SEAR- South East Asia Region

SNS- Social Networking Site

UN- United Nations

UNFPA- United Nations Fund for Population Activities

WSWCQ- What Should We Call Quitting

WHO- World Health Organization

ABSTRACT-

As social media is continuing to grow in popularity among young people, it holds a potential for health education, promotion and health behaviour change among them. Social media may be a useful tool to encourage positive health behaviour change.

The objective of this study to identify uses, reach and effectiveness of social media to promote positive health behaviour change in young people.

Methods- Search terms were used in database to identify relevant literature on social media use, reach and effectiveness in promoting positive health behaviour in young people.

Results- A total of 41 studies were identified of which 14 studies were relevant to answer the objective of this study. Effect of Social media interventions on health behavior change was found positive in young people. Facebook was the most utilized social networking site in terms of behaviour change in young individuals.

Conclusion- With wide reach and higher user engagement social media provides an opportunity to engage young people into positive health behaviour change. Social influence and online peer support play a major role in promotion of health maintenance attitudes and behaviours.

Keywords- young people, young adult, youth, adolescent, health behavior, health communication, health promotion, smoking cessation, alcohol or tobacco use, physical activity, mental health, sexual health, diet and nutrition

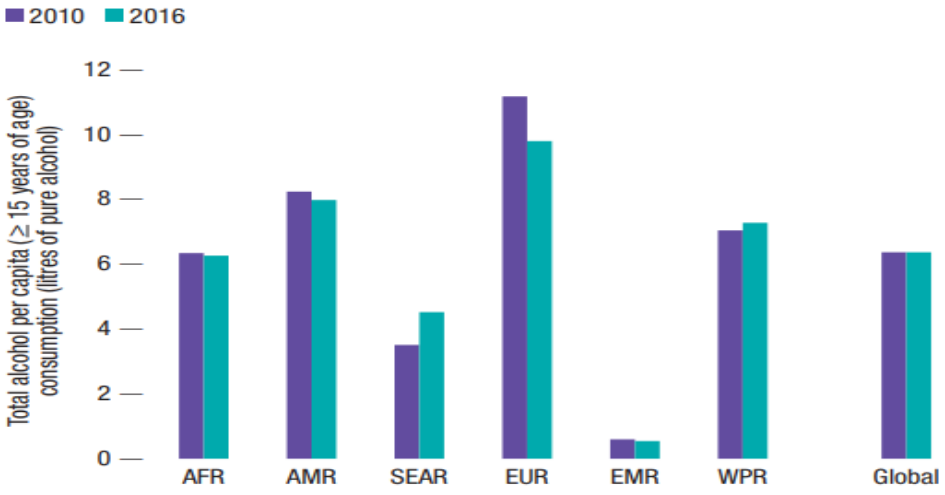
INTRODUCTION-

Adolescents and youths in the age group of 10-24 years are referred as young people (UNFPA). In every country young people are valuable human resources. Young people are the window of opportunity, as 10-24 years of age is a “period of major physical, physiological, psychological and behavioural changes, that sets the stage for a healthy and productive adulthood and diminishes the probability of health-related problems in later years” (Sunitha & Gururaj, 2014).

According to WHO report (2018), a large number of young people aged 10-24 die each year and suffer from behaviour risk factors such as alcohol or tobacco use, physical inactivity, unprotected sex, mental health, violence, injury and others contributing to global disease burden.

Figure 1 shows worldwide alcohol consumption among 15 years and older and in the WHO South-East Asia Region (SEAR) it is increased by almost 30% since 2010 (WHO, 2018).

Fig. 1 Alcohol consumption among 15 years and older



Source- WHO Health Statistics, 2018

The term ‘social media’ is used interchangeably with internet to describe “sites and application that allow information sharing and interactive activities among online communities” (Gold et al., 2012). Social media comprises of websites and applications which enable “users to create and share content or to participate in social networking” (Shetty et al., 2015).

Social media refers to a collection of different websites and applications like Facebook, Twitter, Instagram, WhatsApp or YouTube to share information and to spread awareness globally about any public or social occasion through social networking.

Table 1 represents different social media tools which engage and facilitate an open exchange of information with the people.

Table 1: Social Media Tools

TOOL	**DEFINITION**	**EXAMPLE**
Social Networking Sites- Health specific	Medium for users to create or share health-relate contents or information with others online	Facebook, Linkedin, Instagram, Google+, Youtube
Microblogging	Short text posts-140 characters only	Twitter, Tumblr
Blogs	An internet side where any individual can write about any topic or issue and receive comments	Scienceblogs.com, Wordpress.com, Blogspot.com
Wikis	Multiple users can post contents related to any topic	Wikipedia, WikiHow

Source- Korda & Itani, 2011

Social media have become an important information hub where public health authorities use this platform for sharing information and risk communication during crises (Gui et al., 2018). For example, Johns Hopkins Bloomberg School of Public Health shares information, news, advertisement of new initiatives in the health field and scientific

research via an open Facebook page (https://www.facebook.com/JohnsHopkinsSPH). Also, it invites other public health organizations and readers to express their views on health-related research. The school also has a presence on Twitter, Instagram and Youtube.

According to George, Rovniak & Kraschnewski (2013), social media have established a huge worldwide system that can rapidly disseminate health information and mobilize large number of young individuals; to drive awareness, provide accurate information, facilitate exchange of ideas and produce improved health behaviour and outcomes through social reinforcement.

Fig. 2 WHO Post on Social Media

Adolescents and youths have the highest rates of social media use of any age group (Hausmann et al., 2017).

Facebook is the most common platform used by young individuals (Hausmann et al., 2017). Facebook contributes to the ease of understanding of young people to learn about health-related matters as it contribute to increase in their autonomy, seeking to know what is relevant and at the same time by posting questions online to clarify their questions about health issues (Aragão et al., 2018). Facebook and Twitter are used as a social support tool, where online users are encouraged to share health related information and advice to virally disseminate information on a mass scale (Maher et al., 2014).

For young people frequent use of social media contributes significantly to the development of both social and behavioural skills through social observation and interaction as they collect information from social media which helps in shaping their own behaviours and beliefs (Villanti et al., 2017) and young people are keen to take up new content formats to explore new technologies and have the potential to transform their lives.

“Health-related content has been a key feature of young users' contributions to the online environment since people started to incorporate accounts of health and illness into their personal homepages” (for example blogs and wikis) by sharing of their own health experiences online for developing more subtle understanding of health information/behaviour (Fergie, Hunt & Hilton, 2016).

Social media can be a powerful medium for young individual’s health education and advocacy regarding health issues as “human beings are a highly social species and they are often influenced by their colleagues, friends or by friends of friends” (George, Rovniak & Kraschnewski, 2013).

The social media interventions are increasing in the public health field to improve health outcomes and health behaviours (for example smoking cessation, diet practices, physical activity and body image) as they can cross physical and geographical access barriers (Welch et al., 2016). Social media is being recognised as an effective measure through which behavioral health interventions can be disseminated in the young people to overcome barriers associated with treatment seeking, stigma, cost and accessibility (Deady et al., 2018). Social media can be a strong promoter of information and communication to change the behavior, improved health outcomes and living standards of the young people. However, it is essential to understand use and effectiveness of social media in health education and promotion.

RATIONALE-

It is believed that this study will help gain insights on the effects of social media on the young people and how social media can lead to their behavioural change. The findings of this study will be useful to the public health agencies to develop health promotion messages on social media in such a way that it can be used to effectively communicate with young people on behavioural issues.

And also, the results of this study may influence further research in the public health field on the use of social media for the health context in terms of exposure to new ideas and information, to raise awareness of current issues and events about health in young individuals.

RESEARCH QUESTION-

What is the use, reach and effectiveness of social media intervention for promoting health behaviours among young people?

OBJECTIVES-

- To find out how social media can be used positively for health education and promotion purposes in young people
- To assess the reach and effectiveness of social media to promote health behaviour change in young people

METHODOLOGY-

Search Strategy-

All available literature from multiple databases were used to search for “use, reach and effectiveness of social media in young people’s health behaviour”; Welch Medical Library, PubMed, Cochrane Library, Science Direct, Springer, Wiley Online Library, and

Web of Science. The relevant search terms are combined with young people, young adult, youth, adolescent, health behavior, health communication, health promotion, Facebook, Twitter, and outcome of interest (health behaviours) such as smoking cessation, alcohol or tobacco use, physical inactivity, mental health, sexual health, diet and nutrition. Each term was entered as a key word. And, the reference list of included studies and Google Scholar are also searched to identify relevant studies. Studies published in English between 2000 to 2018 were included in this review.

Inclusion Criteria-

Study population-

Adolescents and youth (aged 10-24 years) were included regardless of health status.

Intervention-

Studies with online interventions using social media and web-based or internet-based to promote health behavior change regarding quitting tobacco or alcohol, smoking cessation, change in physical activity behavior, diet awareness, quality of life, knowledge, attitude and self-efficacy either completely or in part were included. Studies which were not in English were excluded.

Setting–

Any country.

FINDINGS-

Summary of included studies is given in Appendix 1.

USE OF SOCIAL MEDIA FOR HEALTH EDUCATION AND PROMOTION-

The social media is increasingly used for health purposes, such as, Web-based health information which includes disease-related information, physical activity, smoking cessation, diet/nutrition, sensitive and stigmatized health topics such as mental illness and

for sexual health which is beneficial while maintaining anonymity of exploring such topics through online social media. Young people have access to health information 24 hours a day and 7 days a week which encourages personal awareness about wellbeing and prevention of diseases (Gold et al., 2012, Strecher, 2007).

"Behavioural change theories have proven important in developing successful online health promotion activities" such as widely used theory of planned behaviour, and social cognitive theory helps advance health behaviour intervention efficacy for social media approaches (Korda & Itani, 2011).

Social media interventions based on the Theory of Planned Behavior facilitates social support; where users can ask questions, seek advice, discuss ideas and thoughts related to health behavior change with the large community at a social networking platform; and scientific and other complex questions regarding health diseases which can be addressed by expert through the online forums available on social networking sites (Brindal et al., 2012; Webb et al., 2010).

Albert Bandura proposed that social modelling plays an important role in social learning and social cognition which results in the formation of knowledge, attitudes and beliefs in the young population (Bandura, 2001).

Social support, social cognitive and social marketing theories have been incorporated into online social media HBCIs to understand how young people access information on social media about the health issue, preference of SNS in searching for information and support, and how well the young users are engaged in the SNS-based interventions (Yang, 2017). Another advantage of Social media HBCI's is their potential in achieving greater impact compared to traditional interventions (Yang, 2017). For example- For example-An eight-week running program "(UniSA Run Free)" was designed by health professionals with fitness experts via FB based on social cognitive theory to promote physical activity

(Looyestyn et al., 2018). Each day for 8 weeks the facilitators posted informative messages and encouraged social interaction by asking users to post motivational quotes, phots, opinion polls, and providing information with links, and posts prompting participants to answer questions and communicate with others. As a result, there was a significant increase in the effectiveness of intervention, improvement in the physical activity and fitness level and in the social support as well (Looyestyn et al., 2018).

Social media features such as data sharing (sharing of information about activity, goals, or experience to other participants and nonparticipants) and communication (many to many, one to one and one way) give a positive outcome for health behaviours such as physical activity, nutrition or diet and weight maintenance interventions using blogs, videos and other social networking sites which enable young people to share their own experiences with others (Elaheebocus et al., 2018). These social media features are associated with higher level of engagements of participants to enhance motivation and social support of other young individuals because social connections contribute to motivate participants to engage more with behaviour change interventions and also peer-led support increases the frequency of participants visiting an intervention's medium such as websites, blogs, SNS's and discussion forum (Elaheebocus et al., 2018).

"Picture Me Smokefree" Intervention was designed as a low-cost alternative on Facebook to promote user-driven peer support to interact in an online group to engage young adults (19-24 years) in behaviour change (Haines-Saah et al., 2015). A visual method "Photovoice" was planned to assess the potential for adapting photo methods influencing tobacco use, reduction or cessation to a social networking platform. Participants were asked to take a picture (either mobile phones or digital camera) and caption it online about tobacco use, health and quitting. As a result, Picture Me Smokefree demonstrated that peer interaction on social media involves and offers young people the opportunity to learn

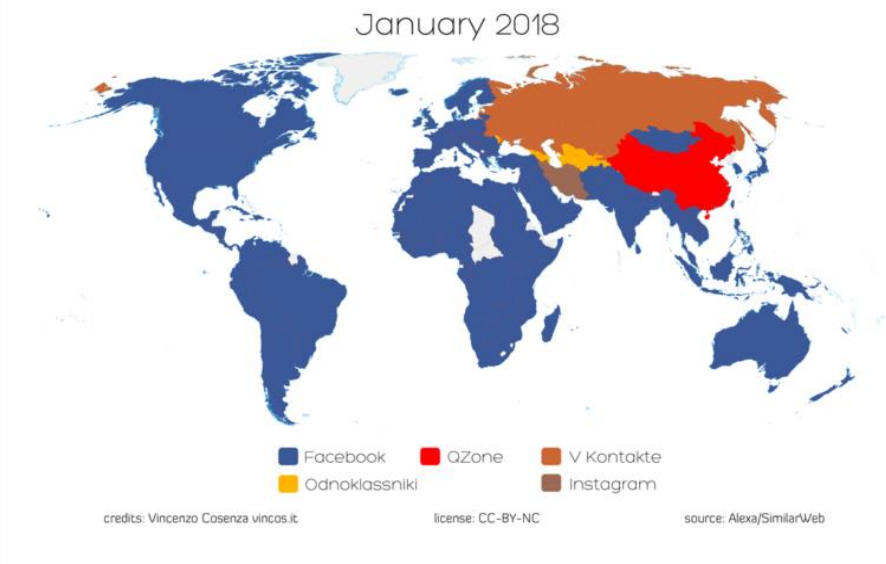
from each other's experiences while providing social support irrespective of their smoking or quitting status (Haines-Saah et al., 2015).

Young people's attitudes, values and beliefs to change health behaviour is the result of social interaction; social media provides an opportunity to connect on mass level through social network which demonstrate positive health behaviour change (Levac & O'Sullivan, 2010). Likewise, social modelling and social influence also demonstrate positive impact on behaviour change as young people try to change their behaviours by observing other's actions towards particular behaviour and public health agencies can increase the reach and engagement through posting health-related content on a social networking site (Levac & O'Sullivan, 2010).

REACH AND EFFECTIVENESS OF SOCIAL MEDIA TO PROMOTE HEALTH BEHAVIOUR CHANGE-

"Reach, the potential of exposure to health communication, is an important aspect of the promotion of behaviour change interventions on social media" (McGloin & Eslami, 2014). Social media has shifted the way of communication with people around the globe. The young people community is often difficult to reach with reference to disease prevention and health promotion, however, are globally accessing social media. Now-a-days internet and social media use has been the important part of every young individual's life because both internet and social media can be accessed in people's homes, on smart phones, tablets, desktops and laptops, in public libraries, through internet cafes or other public access points, and is available all day every day. Social media reach has been leveraged as a communication tool to promote health education and eHealth interventions to change health behaviours while facilitating more widespread access of health-related information among adolescents and young adults. Engagement with social media is transforming learning, socializing and communication among young people by offering an opportunity for them to access information, communicate, contact, explore and chat.

Fig. 3 World Map of Social Media

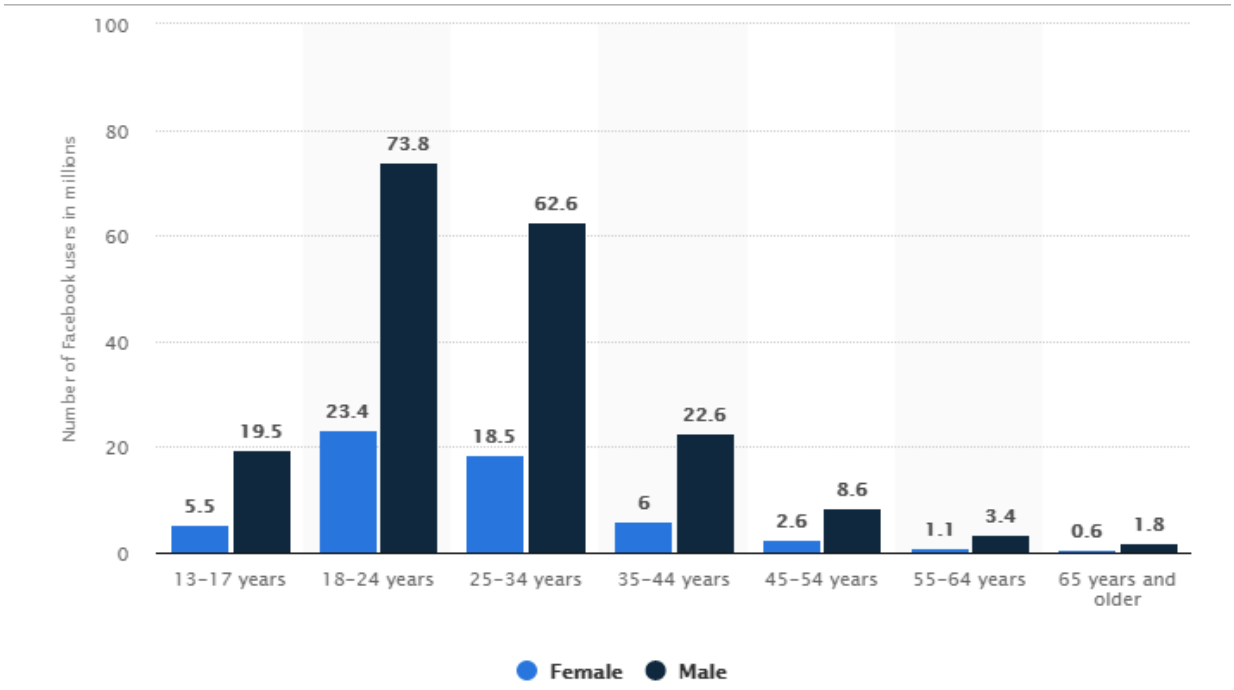


Source- Kallas, 2018

Figure 3 World map of social media represents a visualization which shows the most popular social networks around the world; and Facebook is constantly dominating social networking worldwide (Kallas, 2018).

Figure 4 statistics shows the number of Facebook users by age and sex in India as of January 2018. The male category has the highest number of Facebook users in the age group 18-24 and amounted to about 73.8 million. The highest number of female users amounting to about 23.4 million is in the same age group of 18 to 24 years.

Fig. 4 Facebook users across India as of January 2018, by age and gender (in millions)



Source- Statista, 2018

Woolley and Peterson (2012) designed a Facebook page intervention named "Get Up and Do Something (GUADS) Social Networking Initiative" to motivate healthy attitude and behaviours to increase physical activity and healthy eating. This campaign utilizes features of social media like wall, pictures, videos and advertisement of health topics and issues to promote healthy behaviour intent and adoption. Majority of participants were between the age of 18 and 25 and 73 percent of them agreed that GUADS posts helped them understand health topics and served as a "reminder" to be more active in terms of fitness and to make healthier food choices. As a result, participants reported that whenever they see the posts, they read the posts and engage in health information seeking behaviours as it reminds and motivates them to make healthy decisions about fitness and diet choices.

One study suggests that social media messages are both safe and acceptable than other sources and have potential to influence the young generation (Robinson et al., 2017). Social media messages are feasible as it has an impact of engaging young people in health promotion and prevention of diseases and being able to communicate online safely, in addition, it supports and educate other young people as these messages are helpful, enjoyable and worth the time, money and effort (Robinson et al., 2017).

Reachout.com (https://au.reachout.com/) is an online mental health promotion, prevention and early intervention service which uses "content generation, sharing and campaigns as a means by which to promote access to information and services as well as peer-to-peer support" for young people (Swist et al., 2015). As a result, ReachOut.com was used by approximately 89% users aged 16-24 years and provided services were effective in engaging them and facilitating help-seeking behaviour to manage symptoms of depression, stress or anxiety among them.

One of the reasons to deliver public health interventions using social media is its capacity to build and reinforce social support for improving health behaviours and outcomes (Rice et al., 2016). Social media is often used as a public health platform or setting for sharing knowledge, building skills, increasing the reach of public health interventions, fostering empowerment, and facilitating decision-making among young people (Ndumbe-Eyoh & Mazzucco, 2016). "Enabling social support through interactive social media has been linked to positive impacts on health outcomes by influencing knowledge, motivation, self-efficacy (one's perceived ability to perform a behaviour), and other beliefs and cognitions towards health behaviours" (Welch et al., 2018).

According to Smith & Christakis (2008), social media affect health through a variety of mediums, including "the provision of social support (both perceived and actual), social

influence, social engagement, and person to-person contacts". Online social networking is a major factor to encourage, adopt and spread health behaviour.

In an online fitness program on social media to improve and promote dietary practices among young participants with similar age, sex and BMI it was found that the impact of social influence has significantly improved adoption of such program among overall participants and led to improve in their health behaviour (Centola, 2013).

The young individuals have the convenience and ease of access to social media, because online communication is widely known and used among them. In one study young adults described the benefits of seeking health information online through social media and recognized these channels as useful supplementary sources of information to healthcare visits (AAP, 2016). Participants claimed that online medium provide ease, convenience and accessibility of any kind of health information as there is an incredible plethora of health knowledge (healthy practices, healthy tips, healthy things to do better mentally and physically) available which replace visit to hospital for any health issue; also, to find health information on social media is a huge time saver because information is quickly available (Briones, 2015). Research also supports the use of social media to enhance wellness and promote health behaviours such as smoking cessation and balanced nutrition.

According to Laranjo and colleagues (2014) social networking sites are becoming omnipresent in young individuals' regular day to day life and have a vast reach of regular users globally; presents a low-cost opportunity to virally spread health information (Kohl, Crutzen & de Vries, 2013); "WhatShouldWeCallQuitting (WSWCQ) is a Tumblr blog about quitting smoking (http://whatshouldwecallquitting.tumblr.com/) to reach out to unreached users who have a desire to quit smoking/tobacco by liking or following posts related to cessation; as a result it provide support and encourage users who are struggling to quit (Jacobs et al., 2016); promotes social support and social influence; have huge

potential to improve engagement facilitates health behavior change, makes SNS particularly appealing in the field of public health. In this way social media health interventions can be incorporated in young people's daily lives without putting an extra burden on their already busy lives (Laranjo et al., 2014).

Social media is relevant for interventions related to health behaviour as three primary factors are associated with the impacts of social media in behavioural interventions- "usage or engagement of young people; enhanced perception of social support, helpfulness, satisfaction, and motivation; and behavioural outcome" (Elaheebocus et al., 2018). These factors are responsible for the positive social influence in sustaining behaviour change in young individuals (Merchant et al., 2014). Also, it provides direct support from peers and experts interacting/communicating with online users either one-to-one or many at the same time which have an impact on behavioural outcomes (Merchant et al., 2014).

Social media has the potential to deliver public health interventions for several reasons- (a). It can reach to vast group of young people (Facebook is one of the most common social networking sites which has more than 1 billion users), (b). Social media health behavior related messages are more influential than the health messages delivered through conventional marketing strategies, and (c). Retention and active engagement of young people is more in online social networking sites (Maher et al., 2014).

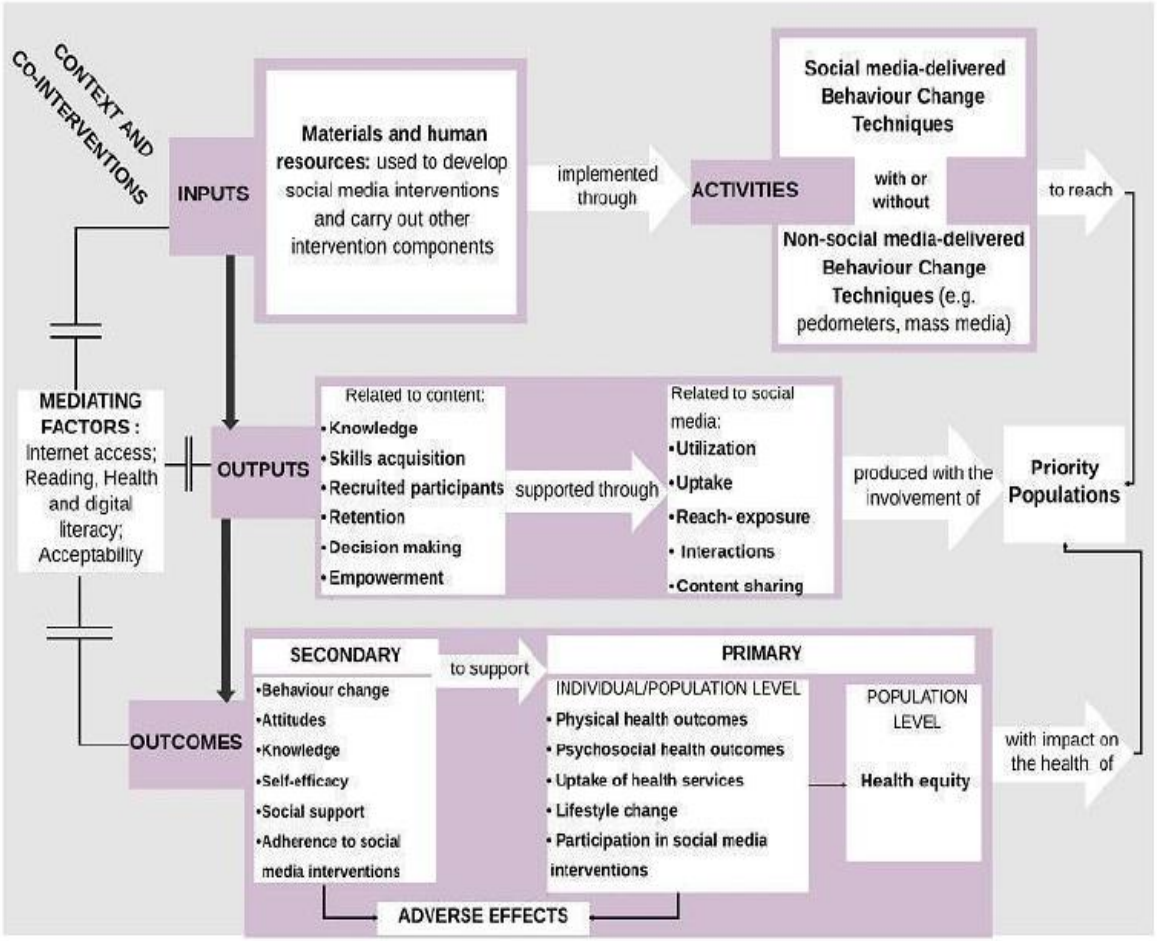
Social media health messages when combined with brand ideals, who are role models or leaders, to appear in health programs or campaigns are used to prevent risk behavior in young people as it is a useful strategy for the reduction of barriers to health promotion programs, to increase engagement, to gain information about risk prevention messages, to make positive decisions about available health resources, to effectively connect them with health services. Social media is potentially a useful resource which engage positive role models or health professionals that young people trust and raises awareness about

open and comfortable discussions on health-related issues (for example mental health, sexual health), normalizes the emotional struggle young individual faces, reduces stigma and provides acceptable options for young people to deal with lifestyle diseases (Clarke et al., 2018).

Gold and colleagues (2012) in collaboration with public health authorities, IT experts and a community organization developed a project called FaceSpace Project for the delivery of sexual health promotion via Facebook. They used videos with sexual health promotion messages embedded within some postings and interact online on various social networking sites to make young people aware and knowledgeable about sexual health and behaviour (Gold et al., 2012). However, this project did not achieve success to retain participants, but they were succeeded in expanding the reach of promotion of sexual health messages in young community.

The logic model in figure 5 describes the components of social media interventions including behaviour change techniques, resources, expected outcomes such as physical and psychological health, knowledge, attitude, self-efficacy, motivation and emotions to achieve positive health behaviour.

Fig. 5: Logic Model of Social Media Interventions to Improve Health Behaviour



Source- (Welch et al., 2018)

In one study by Chou et al (2009), it is found that social media has the potential to enhance health-related behavior through several ways- (a). Online social networking has increased "perceived social support and interconnectivity" between young people, (b). with increased user-generated content, information sharing is seen as more "democratic", enabling young people to exchange information linked to health behavior management which they need and then using the information for decision-making, (c). social media penetrates the young population irrespective of education, socioeconomic status, race/ethnicity and other health-related characteristics, and (d). currently, public health programs have demonstrated success in adapting social media as a communication platform for health promotion efforts such as quitting smoking and dietary or nutrition

interventions, increasing their reach through online social networking sites (Vance, Howe & Dellavalle, 2009).

Research shows that health behaviour change can disseminate rapidly on social media; for example, a research based smoking app crush the crave was developed with Facebook for young people by framing a positive message ("Stay positive! You can do this!") to encourage those who were trying to quit smoking (Struik & Baskerville, 2014). The results of this study show that Facebook is used to support young people who are trying to quit smoking through social support which increases the success of quitting smoking. Another intervention Tweet2Quit was designed by Pechmann and colleagues (2015) for smoking cessation by identifying groups of smokers. The intervention was based on (a). user-generated "automessage" (Twitter post) to encourage an evidence-based cessation-related topic for group discussion, and (b). individualized feedback ("autofeedback") to online users based on their tweeting within past twenty-four hours. As a result, the overall engagement of the online users was high and Tweeting about smoking cessation by setting a quit date and using nicotine patches were related to abstinence.

Zhang et al., (2015) designed a social media-based exercise program named "SHAPE-UP" for thirteen weeks for young people to promote physical activity. An anonymous profile was created by participants to use the SHAPE-UP website, and each participant was able to see their peers' profile information including their peers' progress and completion of class. Exercise classes were conducted in university for those who enrolled in program. Enrolled participants were then provided with an online timetable of the class. After clicking on a class, participants could read a description about class and sign up for it; also, promotional media messages, motivational messages, one infographic with fitness or exercise tips and videos to encourage physical activity on a weekly basis were posted on website. Additionally, an online tracking tool allowed enrolled members to

keep a journal of their class completion. Result shows that online social influence from anonymous peers significantly encouraged exercise behaviour in young individuals.

Social media sites offer anonymity which is appealing to young people to keep their privacy while exploring sensitive health topics and they are the one who gets benefited the most from health behaviour change which is provoked by such sensitive health information (Prybutok & Ryan, 2015; Jacobs, Amuta & Jeon, 2017). The online user's attention and retention factors depends on their interest, familiarity with the topic, motivation, sentiments and on the information, which is relevant for their own health; their engagement to social media give opportunity to health educators to provide health education and health behaviour training in both enjoyable and memorable manner (Prybutok & Ryan, 2015; Jacobs, Amuta & Jeon, 2017).

Social media provides a medium for "sharing personalised health experiences and information, for social support and can facilitate a sense of connectedness" among young people (McGloin & Eslami, 2014). Fergie, Hunt & Hilton (2016), in their research, suggests that young people who experience any health issue (particularly related to mental health) and have no offline support, adopt an independent approach to produce and consume a range of online and user-generated content to manage their health issues solely and to get online peer-support. Social media, therefore, seems a particularly an important source for young people to get access to blogs and wikis of other people to get information; to make decisions regarding health issues and to find online peer support as well (Fergie, Hunt & Hilton, 2016).

In an intervention designed by Hausmann et al (2017), young individuals aged 12 years or more contacted while visiting the Boston Children's Hospital Adolescent and Young Adult Clinic and provided with a weblink to participate in an online survey about social media use. In the result it was found that use of FB, Twitter and blogs were more prevalent among participants and more than 50% had posted about their health-related status online

(such as mood change, wellness and prevention, acute/chronic medical conditions and sexual health) to seek advice, to connect others with similar conditions, to share their health status and to search for treatment options.

In the field of public health research and practice, social media is an appealing low-cost tool to investigate and to test the behaviour change interventions with a huge number of young populations (Capurro et al., 2014). "Multidirectional communication tools—a hallmark of social media"—allows for fast and collective distribution of health-related information. This situation opens the door for incredible opportunities to assess the health hazards of sedentary lifestyle behaviour and to promote health education and promotion for the same. Therefore, social media represents a new line of action for public health professionals (Capurro et al., 2014).

Social media marketing is described as the use of social media "that incorporates the principles and processes of commercial marketing…… with a goal to design and implement programs to promote socially beneficial behavior change" (W. Douglas Evans, 2008).

According to Centola (2010), commercial companies like StayWell, and Healthways have used online social platform for health education and promotion; For example, these companies with Twitter and Facebook sites have found that young people are willing to engage in preventative behaviours and attitudes toward smoking cessation, exercise and better diet practices and have a viral quality. Open social resources provide access to young people to interact on social media websites, where they can learn about new ideas, information, and behaviours from one another.

In public health, social marketing endeavours to improve health behaviours in young people through market research as they understand people's attitudes and beliefs which influence health behaviour in response to health message; for example, tobacco countermarketing approaches on young people to join a social movement against tobacco

use, to carry on with a non-smoking lifestyle, and to make a move to promote a non-smoking society (W. Douglas Evans, 2008). It is proven that the use of social media as an eHealth education channel has reached to the young generation.

It has been identified through various studies that social media act as a social support tool in which online social networks are able to influence social norms which is an important factor of health promotion intervention. Online health promotion campaigns to change behaviour provide social support through sharing of information, posting own experiences, asking and answering questions and also the capacity to reach to and engage to a large community of young people (Jane et al., 2018).

Presently public health agencies CDC (https://www.cdc.gov/socialmedia/), WHO (http://www.who.int/) and other UN agencies are using Facebook, Twitter and Instagram to provide access to credible, science-based health information to reach to young people, to reinforce and to build open information exchange infrastructure.

Fig. 6: Example of a screenshot from the WHO page on Instagram

Source-WHO Instagram

WHO is working with Google through the Google Fit app (http://www.who.int/behealthy/digital-health/promoting-health-in-the-21st-century) to

share health advices using new and innovative platforms of digital technology, to reach to more people with its recommendations on physical activity for preventing hypertension, overweight and obesity, to improve mental health and overall well-being and quality of life; for example Google fit app uses sensors in a user's activity on mobile devices to record physical activities like walking or cycling, which are measured against the user's fitness goals to provide a comprehensive view of their fitness (http://www.who.int/behealthy/digital-health/promoting-health-in-the-21st-century).

DISCUSSION-

A total of 41 studies were identified from the database search; of these 41 studies 14 studies are highly relevant on the use, reach and effectiveness of social media interventions. These studies found that use of social media for the health behaviour change interventions may be effective, as these studies reported significant improvements in health behaviour change in young individuals. However, effect sizes for behaviour changes were small. These studies found that online interventions using social media can be effective for the young people as they retain over a period of time. The types of health-related information accessed by young people are related to tobacco/ smoking cessation, physical activity and diet/nutrition. The Anonymity is a key reason for using the social media in a mental health intervention in which stigma is a problem as anonymity prevented young people from being judged.

It was observed through various studies that social media- (a). has positive impact on their health-related behaviours through learning, socializing, creativity, increased access to information, social and emotional support from peers; (b). is a good source of health information; (c). influence health behaviour changes in young people because of contents seen on media; (d). develops understanding about health from sharing and creating health-related content.

Table 2 represents effectiveness of social media because of various reasons to promote health behaviour changes in young people. Overall, social media HBCI seem to have a potential to achieve a positive behaviour change among young people.

Table 2: Reasons for Effectiveness of HBCI on Social Media

Reasons to deliver health behaviour change interventions
Cost effective alternative to traditional methods of interventions
Vast reach, engagement and retention
Increased convenience to young people; Accessibility; Information available at any time; Online communication; Attractiveness of social media
Reduction of stigma
Social influence; Social support

These results suggest that the social media and its tools in the field of public health is still growing. Social media provide novel research and practice aids beyond their multidirectional communication, low-cost and wider reach on "taboo" public health topics.

RECOMMENDATIONS-

As young people are at a stage of development, social media can utilize its potential to influence and promote responsible health behaviours and attitudes. To bring change in health behaviour, health messages needs to be both persuasive and pervasive and part of the rituals and environment which define daily routine. It is important in respect to credibility, that social media sites have a current and frequently updated information. Designing of social media interventions is such that it can provided primarily within the social network setting. To make health messages memorable for the users, public health professional should ensure that audio-visual messages are appealing and entertaining with

catchy titles. Social media is available globally and using social media platform for public health research provides an opportunity to reach and share health-related content with young audiences outside the research community which are difficult to reach geographically and do not read any scientific articles.

IMPLICATIONS FOR INDIA-

With the exponential growth in web-based communication in India, social media has emerged as one of the preferred or favoured communication outlets. Social media is participatory, socially engaging, and reciprocal. Therefore, it provides opportunities for health information sharing, social networking and interactive engagement with other young users. Through the review of literature, it is observed that majority of the study papers related to the use, reach and effectiveness of social media on health behaviours are conducted in western countries. There is easy accessibility of social media and the services provided by social media are large in these countries (Singh & Amiri, 2017). In India there are very few studies that have been conducted in the Indian context and are related to the impacts of social media on young people's academic performances and their lifestyles. No study has been conducted with behaviour change interventions in India.

Social media presents an unusual opportunity to identify and deliver health behaviour interventions for young people which can be effective as dissemination of health information is faster than any media which helps inform and empower young individuals to change themselves (Bhardwaj, Avasthi & Goundar, 2017).

In India, the number of social influencers are high because they have a large number of young followers; and any health-related posts from influencers may help a given message reach an audience primed to engage with the content. The purpose of using influential users in any HBCI to increase the impact of the healthy behaviour because social

connection act as a promoter of behaviour change which can help ensure that young people will engage in adoption of health behaviour.

CONCLUSION-

This review summarizes the use, reach and effectiveness of social media in promoting positive HBC in particularly young people. The evidences from the studies reveal that social networking sites can be effectively used to target audience at the age group of 10 – 24 for health behaviour change interventions. Social media use is constantly increasing among young users and has become a routine daily activity. Social media offers key features such as reach, accessibility and potential for engagement, research and collaboration and relatively less expensive to administer and maintain that make it rich ground for promoting behaviour change. Important aspect of using social media for health communication and behaviour change is that it can provide valuable peer, social, and emotional support for the young people.

Finally, more information and research is needed about behaviour change interventions in Indian context as social media has proven potential for health promotion and behaviour change.

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APPENDIX 1: Summary of Findings of Included Studies

Author	**Type of Medium**	**Behaviour Change Intervention, Time Period and Type of Theory**	**Target Group**	**Objective**	**Message**	**Results**	**Achievement**
Brindal et al., 2012	Website (Total Wellbeing Diet)	Diet information and weight loss program (12 weeks)	18 years and over	To determine supportive features and personalization on a website intervention affect weight loss and retention	Social networking program on an interactive website which provide social support and dietary information through various tools such as meal planner and real-time dietary compliance visualizations	Decrease in retention of users but weight loss was significant	Inability to translate intention into actual behavior And Inappropriate web-based system design

Gold et al., 2012).	Facebook, (www.facebook.com/thefacespaceproject), Flickr, Twitter, Youtube (www.youtube.com/thefacespaceproject)	Sexual health promotion; 6 months	Young people aged 16-29 years	To provide recommendations for developing health promotion interventions on social networking sites	Videos with sexual health promotion messages embedded within some postings and interact online on various social networking sites to make young people aware and knowledgeable about sexual health and behaviour	Did not achieve success to retain participants, but they were succeeded in expanding the reach of promotion of sexual health messages in young community	Under-estimated the time and effort required to develop the sites initially, and to maintain them for the duration of the project
Andrade et al., 2018	Facebook, Twitter, Instagram, Youtube https://www.youtube.com/watch?v=todbTLPy8JU	Social marketing campaign in collaboration with the branded, "Positive Youth Development-based	12–24 years Latino people	To engage youth in health-related behaviours - To test innovative engagement strategies using branding and digital media for improving	Youth created video-based dramatizations and shared their stories through blog posts and in video format. Adelante staff posted prevention messages	Increased reach of intervention among Latino youth, peer support, increased engagement, and reduced	Clear calls to action in intervention messages and ads, including encouragement to join the Adelante social media

		(PYD) Adelante" intervention to target risk factors for substance abuse, sexual risk and violence 4 years Based on social modelling		target risk behaviours	weekly through ad, entertaining GIF or link to a news story or other content of interest	risk behaviours	network, Social modelling, Branding strategy, and Participatory approach
Jacobs et al., 2016);	Tumblr (http:// whatshouldwecallquitting.tumblr.com)	Smoking cessation intervention	Aged 18-24 years	Use of social media strategy to reach and engage young adult smokers in quitting smoking	Creating novel, branded content (eg, #quittingsmoking), conducting proactive outreach to current and former smokers aware of the blog, and fostering user	A promising channel to reach and engage young adult smokers, provide support and encourage users who are struggling to quit,	Slow but steady growth of online community, and enables users to locate content easily that is of interest and exchange support in a

					engagement and support within WSWCQ	social support	variety of ways
Pechmann et al., 2015	Twitter (Tweet2Quit)	Smoking Cessation intervention for 100-days	Young adults (20 years or more) in 2 Twitter support groups	To explore if sending automessages to online self-help groups encouraged engagement and to see if overall or specific types of engagement related to abstinence	Development of daily automessages suggesting discussion topics that were posed as questions to prompt tweeting and they were given free nicotine patches	Engagement in the intervention was high, marginal abstinence, countering roadblocks to quitting, building confidence about quitting, setting a quit date were related to abstinence	Twitter-based social support groups combined with automessages to promote smoking cessation, but sample size was small
Haines-Saah et al., 2015	FacebookPicture Me Smokefree Intervention	Smoking cessation 12 weeks	19-24 years young adults	To determine the feasibility of engaging young adults in participating in user-driven, online	Picture me smokefree is a FB photography group. Participants are encouraged to post pictures	Feasible and provided opportunity for young adults to access peer support for	More interactive features are necessary, and a virtual reward or contest

				forums intended to provide peer support and motivate critical reflection about tobacco use and cessation among this high-use, hard-to-reach population	with captions related to quitting smoking. Moderator posts photo challenges, topics or contests.	quitting smoking, Reinforcement for cessation (daily alerts)	system to encourage participation would possibly be the most appropriate and cost-effective approach
Woolley and Peterson,2012	Facebook (Get Up and Do Something)	Physical activity and nutritional health; Based on Health Belief Model	18 years and old	To motivate health seeking actions by searching health information online, and to promote both healthy behavioral intent and adoption	Wall, pictures, videos, and advertisement post on Facebook page to promote awareness of health topics and issues	Majority of participants were 18-25 years of age and they agreed that obtaining health information on internet is credible and make them confident about	Content posted on the page as believable, interesting, likable, fun, accurate, attention grabbing, and noticeable

						taking a healthy-decisions regarding their own health	
Centola, 2010	Social Networking Sites	Health promotion; 3 weeks	Young Participants	To determine the effect of online social network on health behaviour	Participants were randomized in two different situations in an online social network, notifications were sent to participants when a health buddy adopts a health behaviour	Social influence and social network increased the engagement in behaviour change	Social influence; social support
Centola, 2013	Health-interest World Wide Websites, Health forum	Online Fitness program	Young participants with similar age, sex and BMI	To test the spread of behaviour through online social contact	Participants created an anonymous online profile, and a set of health interests. They were matched with other participants	Significant increase in the adoption of health behaviour within online social network	Social reinforcement

					referred to as "health buddies". Participants made decisions about whether or not to adopt a health behavior based on the adoption patterns of their health buddies' activities		
Swist et al., 2015	Discussion forum Reachout.com (https://au.reachout.com/	Mental health promotion	Young people aged 16–25 years	Online mental health promotion, prevention and early intervention service	Content generation, sharing and access to information and services as well as peer-to-peer support	Users reported symptoms of depression, anxiety and/or stress; effective in engaging with and facilitating help-seeking	Online services with integrated social media functionality

						with young people	
Struik & Baskerville, 2014	Facebook “crush the crave”	Smoking cessation intervention; 8 months	Young adults 19-29 years	To support young smokers to quit smoking	Daily posts on Facebook about quitting plan, tracking of smoking habits and cravings, telephone-based help, health improvements achieved, notifications of money saved, virtual awards to praise performance toward reaching milestones, evidence-based reliable information (eg, nicotine replacement therapy), and the ability to interact with	User engagement in terms of likes, comments, and positive reinforcement, clarification, and redirection was provided to user posts, increased social support	Encouraging quitting and management of cravings, denormalizing smoking, providing health information, group motivation, promoting social support, and exposing tactics of tobacco industry

					people for social support		
Looyestyn et al., 2018	Facebook "UniSA Run Free program"	Physical activity (PA); 8 weeks; Based on Social cognitive theory	18 years and older	To determine the effectiveness of a Web-based beginners' running program	Weekly post about running sessions, informative and encouraged social interaction through motivational quotes, providing information with links, asking participants to post photos, posts prompting participants to answer questions, opinion polls to interact with other online users	Significant improvement in social support for PA, strong engagement, retention and favourable feedback from participants	Delivery of the intervention materials on Facebook; Encouraging posts from facilitator varied in content and style and type of posts made (such as questions, photos and humor in the post)

Zhang et al., 2015	Website “SHAPE UP”	Social media-based exercise program for 13-weeks	University students 18 years or older	To identify features of social media (promotional messaging or peer networks) to increase physical activity	Using online promotional messages videos encouraging physical activity and one infographic with exercise tips and motivational messages on a weekly basis were posted on website; social support within an online network	Promotional messages were effective for increasing initial engagement in exercise program but peer networks significantly improved participation levels; Increased self-reported levels of engagement with PA	Peer-to-peer health networks
Hausmann et al (2017)	Social media Use (Facebook, Twitte r and Blog use)	Health related information; Within 6 months	12 years or older	To determine adolescents and young adults (AYAs) use of social media to	Participants were approached and asked to participate in a survey about social media	Majority of the participants posted about their health status on	Suggestion to improve the quality of online health content as social

				obtain and share health information and communicate with healthcare providers	use. Agreed participants were provided with a link or QR code to take the survey and given a $5 gift card for completing the survey.	social media to seek information and support with others having similar health condition; and to obtain useful health information	media use among young people is high