Reducing disease stigma among Egyptian medical society: SMC analytical Framework studying Facebook hashtag *#Together_Against_Stigma*

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Abstract

Egyptian faculties of medicine students and alumni are invited to fight disease stigma by creating awareness multimedia under Facebook Hashtag *#Together_Against_Stigma*. The Standing Committee on Human Rights and Peace (SCORP) engages Egyptian medical students' and medical workers in a social bond by creating a bridge of awareness social network under one message "reduce stigma" to link the medical society in a social-media capital centered value chain. SCORP international call for medicine community in Egypt and the knowledgeable activity on social media platforms specially Facebook; raised a social and media concern for research in the field of disease stigma.

This paper is socially analyzing impact of social-media content in reducing disease stigma and promoting the area of health equity among Egyptian university medical students' associations; in which Social-Media Capital (SMC) framework is used to examine medical society (students, alumni, worker) members' insight change towards their patients, when they get exposed to Facebook multimedia pieces (videos, info graphics, photos) under Hashtag *#Together_Against_Stigma*. In addition to applying social network analysis (SNA) methodology to study Facebook posts' engagement rates and its effect on SMC mediators.

The study concluded that SMC has a significant role in strengthening up the relationship between doctors themselves regarding accepting each other's differences and prospective, as well as establishment of tolerant bridges among the practitioners and their future patients.

Keywords: Social Network Analysis, Social-media Capital (SMC), SMC resources, SMC centered value chain, SMC mediators, Internet Self-efficacy, Social Presence, Stereotyping, SCORP, IFMSA

دور رأس مال شبكات التواصل الاجتماعي في تقليل وصمة المرض بين المجتمع الطبي المصري: دراسة تحليل شبكي للفيسبوك هاشتاج

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ملخص البحث

يتوجه هذا البحث إلى المجتمع الطبي المصري من طلاب كليات الطب وخريجيها والعاملين في القطاع الصحي المصري للمشاركة في مكافحة وصمة المرض عبر إنتاج محتوى توعوي متعدد الوسائط على موقع الفيسبوك باستخدام هاشتاج *Together_Agaist_Stigma#*. تعمل اللجنة الدائمة لحقوق الإنسان والسلام (SCORP) على تعزيز التماسك الاجتماعي بين افراد المجتمع الطبي المصري من خلال ارتباطهم ببناء شبكة توعوية رقمية ومتابعة محتواها تحت تحمل رسالة موحدة "الحد من الوصمة"، وذلك لربط أفراد المجتمع الطبي ضمن سلسلة قيمية قائمة على رأس المال الاجتماعي لدي مستخدمي شبكات التواصل الاجتماعي.

تقدم هذه الدراسة تحليلًا اجتماعيًا لتأثير المحتوى الرقمي في الحد من وصمة المرض وتعزيز العدالة الصحية بين اتحادات طلاب احدي عشرة كلية طب بالجامعات المصرية، حيث يتم استخدام إطار عمل رأس مال شبكات التواصل الاجتماعي (Social-Media capital "SMC" Framework) لدراسة تحول توجهات وعي أفراد المجتمع الطبي (الطلاب، الخريجون، الممارسون) من الذين يتعرضون للمحتوى المتعدد الوسائط (فيديوهات، إنفوجرافيك، صور) المنشور علي موقع الفيسبوك تحت هاشتاج *Together_Agaist_Stigma#*.

كما تشمل الدراسة تطبيق منهجية تحليل الشبكات الاجتماعية (Social Network Analysis "SNA") لدراسة معدلات التفاعل مع المنشورات على موقع الفيسبوك وتأثيرها على وسطاء رأس مال شبكات التواصل الاجتماعي (Social-media Capital Mediators).

توصلت الدراسة إلى أن رأس مال شبكات التواصل الاجتماعي (SMC) يلعب دورًا محوريًا في تعزيز العلاقات بين الأطباء وقبول الاختلافات في الآراء والتوجهات، فضلاً عن بناء جسور تفاهم متسامحة بين الممارسين الصحيين ومرضاهم المستقبليين من خلال ثلاثة عوامل وسيطة رئيسية لاطار عمل SMC وهي: الكفاءة الذاتية، والحضور الاجتماعي، وتأكيد الذات.

المفاتيح الافتتاحية:

التحليل الاجتماعي الشبكي (SNA) ـ رأس مال شبكات التواصل الاجتماعي (SMC) ـ تحليل الشبكات الاجتماعية (SNA) ـ هاشتاج ـ وصمة المرض ـ الاتحاد الدولي لجمعيات طلاب الطب (IFMSA) ـ اللجنة الدائمة لحقوق الإنسان والسلام (SCORP)

Introduction

"*Together_Against_Stigma,*" is the only project for the Standing Committee on Human Rights and Peace (SCORP) that aim for fighting disease stigma and discrimination in healthcare among medical students. SCORP is a standing committee under auspicious of the International Federation of Medical Students' Associations (IFMSA) that was founded in 1951 with headquarters in Copenhagen. The first official meeting that included IFMSA activities in Egypt was published on June-August 2018 in which they have covered; child abuse prevention, No Tobacco world day, Anti-sexual Harassment, Anti-FGM project, Mr. & Ms. Breastestis, Diabetes, world AIDS campaign, mental health, medical education development, and blood donation campaign.

#Together_Against_Stigma, hashtag became widely spread on Egyptian Facebook medical universities' pages since IFMSA activities' initiated in Egypt; starting with down syndrome awareness workshops (Fayoum Medical Students' Association, FMSA February 2016), charity visits ("Aghsan Al-Zaytoon" for down syndrome and autism in Beni Suef, March 2016), in addition to viral campaigns on accepting deaf (Benha MSA, April 2016), Autism (Tanta MSA, December 2016), Psychiatric disorders (Menofia MSA, February 2017), eye diseases (Kafr El Sheikh MSA, August 2018), B-Sign Language (Azhar Assiut MSA, November 2018), AIDs stigma (Kena MSA, December 2019), green hearts towards stigma (Zagazig MSA, February 2020), World Health Day: leave no one behind (Helwan MSA, April 2020), blind people and right way in helping them (Kasr Alainy MSA, June 2020), people with disabilities (Ain Shams MSA, December 2020), that enroot non-discriminatory, diverse, and inclusive environment among medical students' and future workers with their patients.

Those activities are presented on social media sites in the form of different multimedia like text posts, acting videos, interviews, talking head videos, photos, graphics, vox pops and infographic videos which will be named, according to the research operational definitions, *social-media capital resources*.

This Facebook awareness pages' content is created by users (medical university students') who are considered the *social-media capital structure* for fighting disease stigma and ensure health equity among medical specialists and their patients regardless their inability to get suitable treatment (wealth), the unavailability of treatment places in hospitals or doctors' preferences (power), or even the humiliation of patients' feelings towards their illness and how they express it (prestige).

As mentioned by IFMSA, "Medical ethics, patients' and doctors' rights and duties, doctor-patient relationship, vulnerable groups in healthcare settings and how climate change influences the stigma cycle in the healthcare settings." (IFMSA Egypt, 2023), so this paper will use social analysis for investigating the disease stigma problem among medical students and future workers and their patients to explore to what extend the medical students' associations (MSA) carry out social activities under Facebook hashtag *#Togther_Against_stigma* to reduce discrimination and spread the required awareness.

Problem Statement

This research aims to socially analysis multimedia (videos, info graphs, photos) under Facebook Hashtag *#Together_Against_Stigma* as a stimulus tool for enhancing the social capital (bonding, linking, and bridging) among medical students, future workers, and their patients for the sake of fighting disease stigmatization in the Egyptian healthcare community.

The significance of this topic arises from the systematic examination of health stigma as social problem that is tackled by more than eleven Egyptian Medicine faculties; as an initiative for fighting discrimination and spreading social awareness towards equality of treatment, blind, deaf, HIV and AIDS, mental illness like depression, autism, FGM, and painful menstrual cramp patients.

Literature Review

According to all the fathers of social capital concept with its cause and effect, social-media capital resources (videos, info graphics, photos on Facebook, for the sake this research) has its impact on social-media capital structure that fundamentally involves from social membership and communal development that results into actions of social-media capital value chain. (Adler, 2002 et al) A complementary study mentioned in details each factor, so that social-media capital structure is classified into *market linkage*, *hierarchical bridge*, and *social bonds*. Social-media capital resources is defined as a goodwill of sympathy, trust, and forgiveness (Dore, 1983), and it is also classified as the tripartite of Laumann (1998); flow of information, that makes influence, and leads to solidarity.

Effect of social media hashtags on disease stigma

According to Khadafi (2022), the anti-vaccine movement, fueled by misinformation on Twitter, led to lower immunization coverage and mistrust in vaccines, government institutions, and scientific findings. The movement doubts on vaccine safety and advocates for individual choice in vaccination, with claims that COVID-19 is a government conspiracy. Anti-vaccine hashtags like *#AntiVacc, #StopVaccine, #NoVaccine, #unsafevaccines* were popular on social media, with significant impact on vaccine refusal with 50%, 100%, 93%, and 100% respectively. This poses a significant challenge for immunization programs and public health efforts globally and in Brazil, Indonesia, and USA.

According to Betton (2015), anti-stigma programs are utilizing social media platforms such as Twitter to challenge public attitudes towards mental health. Campaigns from New Zealand, Australia, Sweden, England, Spain, and Denmark are effectively using social media to share stories, engage with followers, and create conversations about mental health stigma. The rise of user-generated content on social media allows individuals to influence mainstream media and policy, potentially leading to attitude adjustments based on peer opinions rather than organizational influence. For

example, Twitter users protest by using *#mentalpatient* hashtag when people criticized Halloween costume perpetuating mental health stereotypes in September 2013. The protest went viral, leading to the removal of the costume from sale and an apology from the retailer. The role of social media in amplifying individual-led conversations and connecting professionals with service users is crucial in changing public perceptions of mental health. Further research is needed to explore impact of social media activity on attitudes towards mental illness.

According to Gerrard (2015), social media platforms often make decisions about moderating posts and minimize their spread in response to public pressure, as seen in May 2012 when publications criticized platforms like Instagram, Pinterest, and Tumblr for hosting pro-eating disorder content under hashtags like *#proana (*pro-anorexia) and *#thinspiration*. The relationship between social media and eating disorders has become more important, as they enforced rules against pro-ED content by issuing public service announcements (PSA) and blocking these hashtags by sending users flagging posts.

Using social network analysis for studying hashtag

According to Pilar (2021), Social Media Analysis for Hashtag Research (SMAHR) framework was developed as a free tool for researchers to conduct social media analysis based on hashtags, offering a method to understand user behaviors and trends on social networks. It includes seven phases; data cleaning, data integration, data selection, transformation, data mining, data evaluation, and knowledge presentation.

According to Djenouri (2022), cognitive computing has seen significant development in recent years, with technologies like Siri, Google Assistant, Cortana, and Alexa leading the way. Social network analysis using graph theory is becoming more popular, with a focus on analyzing semantic features in social networks. Hashtags play a crucial role in social networks like Twitter and Facebook, and hashtag recommendation systems aim to label non-tagged tweets with relevant hashtags. Different solutions have been developed for hashtag recommendation, without sacrificing processing time.

Using Adler (2002) Conceptual Framework for inspiration

Adler and Kwon (2002) present social capital as the goodwill available to individuals or groups, deriving from structure and content of social relationships (p.23). They argue that this goodwill generates value through three mechanisms: information, influence, and solidarity. Social capital may arise from both internal (bonding) and external (bridging) ties, influencing outcomes such as innovation, resource mobilization, and organizational effectiveness. They also identify three conditions necessary for social capital to function: opportunity (presence of social ties), motivation (trust, norms), and ability (actors' competence). The risks of social capital, includes overembeddedness, exclusion, and instrumentalism.
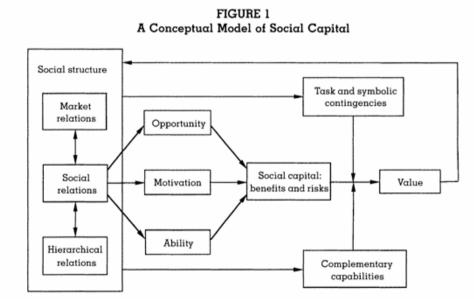

FIGURE 1
A Conceptual Model of Social Capital

FIGURE 1. ADLER& KWON 2002 FRAMEWORK. EXTRACTED FROM THE ORIGINAL ARTICLE

Adler and Kwon conclude that although social capital has matured into a widely used concept across disciplines. Ultimately, the article provides a robust foundation for future research that must be critically examined in practice.

Building on Adler & Kwon (2002) framework, the current study proposes a **social media Capital (SMC) Framework**, tailored to explore the influence of social media content on **reducing disease-related stigma** within the structural context of **Medical Student Association (MSA) Facebook pages**.

In this adaptation, SMC content; such as multimedia posts, hashtags, and public comments, acts as the resource base, while MSA page structures represent the social network architecture enabling interaction. The study analyzes growth rates in reach and engagement, drawing from Adler and Kwon's idea of a value chain wherein social capital is converted into measurable outcomes. These include Facebook post metrics such as reach, comments, shares, and the publishing/interacting behaviors of users.

The current study investigates engagement under Facebook hashtag *#Together_Against_Stigma*, mapping them against the three pillars of social capital: bonding (internal cohesion among MSA members), bridging (engagement across wider medical networks), and linkage (connections to formal health institutions or societal structures like SCOPR). The types of diseases addressed reflect the cultural and social shades of bond strength, while engagement metrics and user interactions quantify the bridging potential of social media content. Most critically, impact on knowledge and behavioral change; examined through the distributed medical society survey for those who got exposed to Facebook multimedia under the hashtag *#Together_Against_Stigma*, becomes the key indicator linking internal bonds, external bridges, and hierarchical linkages; thus, completing the SMC value chain.

By reframing Adler and Kwon's model within the context of digital health communication, this study underscores the growing significance of social media capital as a tool for public health equity. It calls for further inquiry into how social media engagements, when strategically structured, can develop meaningful social capital to challenge stigma and foster inclusive health discourse in digital spaces.

Research Framework

The research uses theoretical-practical framework to investigate disease stigma social problem in which social-media capital (SMC) theory and social network analysis are being used in triangulation with psychometric Likert scale survey to analyze how Egyptian universities' medical society accumulate and deploy social media capital by using social network platform (SNP; Facebook) to combat disease stigma.

Social-media capital (SMC) theory focuses on the influence caused by social media content (SMC resources) and the importance of communication networks among their audience. It proposes that the more audience are exposed to media stimulus, the more easily they will be affected and more social interactions (SMC centered value chain) are shaped depending on their experiences toward family, friends, neighbors, public officials, and strangers (SMC structure).

Social-media capital **bonds** aren't strengthened via social media (Bohn, 2014), but new ties with novel initiatives are being built (Williams, 2019). Facebook is considered effective, because its users' evidence is left to build **bridges** (Ellison, 2007); hence publicly display feelings connect people of same groups (Donath, 2004). Moreover, the frequency of using shared social media content has its positive influence on social capital development in building society **linkage** (Bright, 2015). Internet self-efficacy, social presence, and self-affirmation are the three main factors that act as mediators for online social capital (Jin, 2013); which is defined as Social-Media Capital.

This research aims to socially analyze multimedia under Hashtag *#Together_Against_Stigma*. It proposes that there is a relationship between social media contents (resources) posted on Facebook (SNP) and the SMC mediators; in which multimedia creator can accumulate and deploy SMC through building strong online presence, engaging audience and fostering meaningful relations (SMC value chain).

For the sake of this study, Social-media Capital Framework is inspired (Adler, 2002) and modified to study the influence of **SMC Content** (resources) on reducing disease stigma among **SMC Structure** of Medical Student Associations (MSA)

Facebook pages; in which growth rates (reach and interaction) are analyzed through **SMC Value Chain** of Facebook posts engagements (reach, comment, share) and publishing/interacting behavior.

Eventually, this research aims to investigate the SMC value chain of Facebook multimedia under Hashtag *#Together_Against_Stigma* with relation to the social capital pillars; bonds, bridges, and linkage. Types of stigma diseases addressed in MSA Facebook pages characterize the nature of medical society bonds. Engagement Metrics and interacting behavior quantifies the development of social capital bridges among MSA medical society. Impact of knowledge and behavior change is the attribute that connects between internal bonds, external bridges, and hierarchical linkage.
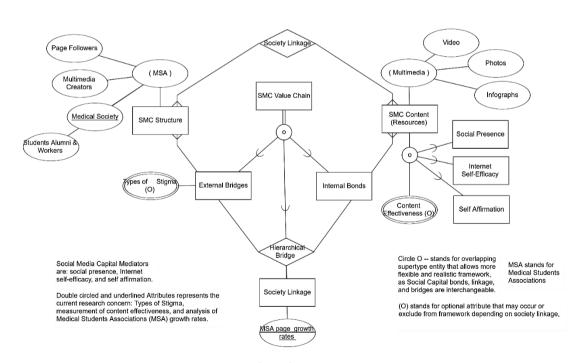

FIGURE 2. SOCIAL MEDIA CAPITAL (SMC) FRAMEWORK. CREATED BY ER. DIAGRAM

Operational Definitions

- **Disease Stigma**: is the act of discrimination that the patients face from their community due to their rare or socially undesired disease like HIV, AIDS, autism, and painful menstrual cramps. It is also referring to the refusal or minimal acceptance of doctor to the patients' painful feelings which could be either physical or psychological.

- **Social-media Capital (SMC) Structure**: is the term of engaging people or organizations in different social media platforms activities. (Saxton, 2020) For the sake of the current study, engaged people are medical society (students, alumni, worker) who are invited by SCORP organization (Market or society Linkage) among an external tie (Hierarchical Bridges) and internal ties (Social Bonds) to fight disease stigma through following, sharing, nudging, or creating awareness multimedia on social media platform.
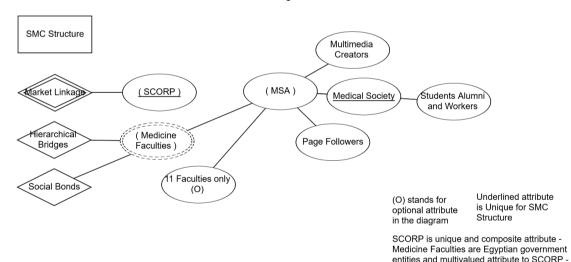

FIGURE 3. SOCIAL MEDIA CAPITAL (SMC) STRUCTURE. CREATED BY ER. DIAGRAM

- **Social-media capital resources**: will focus on multimedia created, shared, pinned, retweeted, posted, or followed by SMC users on Medical Social Associations (MSA) Facebook pages, presented by faculty of medicine students' and alumni from eleven Egyptian universities.

- **Facebook Multimedia under hashtag** *"Together_Against_Stigma"*:

  For the sake of the study:

    o Video: will include acting, motion, graphic mixed with acting

    o Photo: one or more photo attached to the post written under the hashtag

    o Infographic: informative videos, voice over, graphics; without acting

- **SMC centered value chain**: The social-media structure is reacting to the message in five different ways; (1) awareness and impressions (2) shares and emoji reactions, (3) page followers, (4) nudging content on social media platforms other than Facebook like Instagram, blogs, faculty website, and (5) the creation of more multimedia contents about the same message that captivate more audience. For the sake of the current study, SMC centered value chain appears in three dimensions of the *medical market linkage*; i.e. shared values and norms among **medical society** members achieving health equity among different specializations of medical doctors and their patients who differs in wealth, powers, and prestige. *Social hierarchical bridge*; i.e. shared values among **external ties** of medical sectors in order; students, alumni, workers. And *social bonds*; i.e. shared norms among **internal ties**; all medical sector and patients.

- **Health Equity**: According to the World Health Organization (WHO, 2010), it is the absence of unfair, avoidable, or remediable differences among groups of people in the category of health. The society failed to achieve health equity when the main three determinates aren't achieved among the patients. The three determinates that stigmatize health are represented as follows:

    o Wealth: the inability of patients to get the suitable treatment due to financial status

    o Power: the unavailability of treatment places in hospitals or due to doctors' preferences

    o Prestige: the humiliation of patients' feelings towards their illness; depending on their social class, or the way they speak or dress.

Methodology

This research is based on mixed methods; **social network analysis (SNA)** is applied on the eleven Egyptian faculties of Medicine with Medical Student Associations (MSA) Facebook pages which support and publish multimedia under hashtag *#Together_Against_Stigma*, in addition to distributing **purposive questionnaire** on members of the medical society (students, alumni, fresh workers) who are following, engaging, or creating MSA Facebook pages' content.

This research is designed to investigate the impact of social media engagement on spreading the awareness of disease stigma reduction. The quantitative social network analysis involves the collection and analysis of engagement metrics and performance, content-type effectiveness, publishing behavior of best posting time, and additional insights; i.e. audience reactions, activity, comments, and fans reach. ***Social insider,*** is a social media analytics and reporting cloud-based tool used in the sampling strategy, in which MSA Facebook pages URL is integrated and a report is prepared with analysis.

Concurrently, the qualitative method includes a purposive questionnaire with some targeted SMC structure from the medical society; i.e. faculty of Medicine students, alumni, workers, in addition to MSA Facebook page creators, admins, and followers, aiming to explore the content-type effectiveness on their SMC pillars (bonds, bridges, linkage) cognition after getting exposed to the awareness SMC content on MSA Facebook pages. The questions are as follow:

1. After you get exposed to multimedia under hashtag *#Together_Against_Stigma*, do you consider yourself: care provider – health therapist – treatment provider
2. Your insight towards your patient can be described as: service user – patient in need for health guide and medicine prescriber – sick person needs healing treatment
3. What is your new vision about your patient after Facebook hashtag *#Together_Against_Stigma* participation; with multimedia creation or awareness exposure?

Research questions:

1. How SMC content (multimedia) published on Medical Student Association (MSA) Facebook pages under hashtag #*Together_Against_Stigma* help medical society combat disease stigma?

2. To which level (low, medium, high) SMC structure (medical society) can strengthen SMC value chain pillars (bonds, bridges, linkage) after get exposed to SMC content?

3. Can SMC mediators (Internet self-efficacy, social presence, and self-affirmation) affect SMC value chain pillars (bonds, bridges, linkage)?

Sampling size and selection

Social network analysis (SNA) includes eleven Medical Students Association (MSA) Facebook pages created and visible among 17 government faculty of Medicine in Egypt; as follow:

TABLE 1. MSA FACEBOOK PAGE NAME AND UNIVERSITY HOST

No.	Facebook page	Faculty, University
1	Al-Azhar Medical Student's Scientific Association (AMSA)	Faculty of Medicine, Al-Azhar University in Cairo
2	Students' Scientific Society (SSS)	Al-Kasr Al Ainy, School of Medicine, Cairo University
3	Helwan Medical Students' Association (HMSA)	Faculty of Medicine, Helwan University
4	Port Said Medical Students' Association (PMSA)	Faculty of Medicine, Port said University
5	Suez Canal Medical Students' Association (SCMSA)	Faculty of Medicine, Suez Canal University, Ismailia
6	Damietta Medical Students' Association (DMSA)	Faculty of Medicine, Damietta University
7	Egyptian Medical Students' Association Menoufia (EMSA)	Faculty of Medicine, Shebin al-Kom, Menoufia
8	Fayoum Medical Students' Association (FMSA)	Fayoum University Teaching Hospital
9	Egyptian Medical Students' Association, Minia (EMSA)	Faculty of Medicine, Minia University
10	Kena Medical Students' Association (KMSA)	Faculty of Medicine, South Valley University, Qena
11	Zagazig Medical Student Scientific Association (ZMSSA)	Faculty of Medicine, Zagazig

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A purposive sample of 35 medical society member responded to the psychometric Likert scale questionnaire; including three participants from each eleven MSA Facebook pages with a total response of 33, in addition to another two members from El Azhar University (girls' section).

The two main research variables are (1) social media capital (SMC) content published on MSA Facebook pages and (2) SMC value chain gained by SMC structure; in order to study wither medical society can accumulate and deploy SMC pillars (*medical society linkage*, *hierarchical external ties of bridging*, and *social internal ties of bonding*) for combating disease stigma, and fulfilling SMC mediators (Internet self-efficacy, social presence, and self-affirmation).

TABLE 2. EXPLAIN THE RESEARCH RATIONAL THROUGH THE FOUR MAIN CONTEXTUAL FACTORS

Two main variables		Variables stimulus
SMC Content (resources)	Multimedia published on Medical Student Association (MSA) Facebook pages under hashtag *#Together_Against_Stigma.*	Content effectiveness (react, reach) Types of disease stigma
SMC Value Chain (SMC pillars)	- Bonds (internal ties) - Bridges (external ties) - Linkages (societal ties)	Facebook page growth rates (Engagement rates) SMC mediators
Other factors		
SMC Structure	medical society (research sample): Faculty of Medicine students, alumni, workers. In addition to MSA Facebook page creators, admins, followers.	
SMC mediators	- Internet self-efficacy - social presence - self-affirmation	

Method of data collection

The research was conducted over six months, from January 2025 to June 2025. During the first three months, a comprehensive review of MSA Facebook pages is done, including getting connected to the medical society of each association to conduct the qualitative questionnaire. Then the social network analysis is applied on the last three-month April, May, and June 2025.

The survey distributed among medical society exposed, participated, or watched multimedia under Facebook hashtag #*Together_Against_Stigma,* collects and measures the awareness level.

The social network analysis includes types of disease stigma tackled by SMC structure of medical society in Facebook pages.

Data collected of multimedia (videos, photos, and infographics) published under Facebook hashtag #*Together_Against_Stigma* is analyzed by *Social insider* as an effective stimulus for the SMC medical society structure. The following table shows significant types of disease stigma.

TABLE 3. UNIQUE TYPES OF DISEASE STIGMA COLLECTED FROM MSA FACEBOOK PAGES

No.	Name	Facebook page	Faculty, University	Types of stigmas	Type of Multimedia
1	We support deaf disabled	Al-Azhar Medical Student's Scientific Association (AMSA)	Faculty of Medicine, Al-Azhar University in Cairo	Deaf Patients	Acting Video
2	Deaf are not intelligent people				
3	Deaf Body & Sign language				
4	Don't let opinion of other become the measure of your self-worth				Awareness Video with sign language
5	Late pregnancy problems in Egyptian Society	Al-Azhar Medical Student's Scientific Association (AMSA)	Faculty of Medicine, Al-Azhar University in Cairo	Late Pregnancy & Infertility Problems	Vox Pops & Infographic video
6	How to deal with a blind patient?	Students' Scientific Society (SSS)	Al-Kasr Al Ainy, School of Medicine, Cairo University	Blind Patients	Interview
7	Adenomyosis: Together Against Stigma	Students' Scientific Society (SSS)	Al-Kasr Al Ainy, School of Medicine, Cairo University	Painful Menstrual Cramp Patients	Acting Video
8	Autism: Together Against Stigma	Students' Scientific Society (SSS)	Al-Kasr Al Ainy, School of Medicine, Cairo University	Autist Doctor	Acting Video

9	HIV: Together Against Stigma	Students' Scientific Society (SSS)	Al-Kasr Al Ainy, School of Medicine, Cairo University	HIV Patients	Acting Video
10	Stigma lies in differences	Helwan Medical Students' Association (HMSA)	Faculty of Medicine, Helwan University	Accepting Differences	Motion Video
11	Medical language stigmatizing	Helwan Medical Students' Association (HMSA)	Faculty of Medicine, Helwan University	Mental Illness	Photo
12	Leave No one Behind	Helwan Medical Students' Association (HMSA)	Faculty of Medicine, Helwan University	Treatment Equality	Photo
13	International World Day of Candlelight in memory of AIDS victims	Helwan Medical Students' Association (HMSA)	Faculty of Medicine, Helwan University	AIDS Patients	Photo
14	I can't bear anymore!	Port Said Medical Students' Association (PMSA)	Faculty of Medicine, Port said University	Gender Based Violence	Acting video
15	Burns are the 3rd cause for death in Egypt	Suez Canal Medical Students' Association (SCMSA)	Faculty of Medicine, Suez Canal University, Ismailia	Burned Patients	Awareness Video
16	Zero tolerance against FGM	Suez Canal Medical Students' Association (SCMSA)	Faculty of Medicine, Suez Canal University, Ismailia	Female Genital Mutilation/ Parents' patients	Awareness Video
17	Societal refusal	Damietta Medical Students' Association (DMSA)	Faculty of Medicine, Damietta University	Mental Health	Infographic Video
18	How to support women survivors?!	Damietta Medical Students' Association (DMSA)	Faculty of Medicine, Damietta University	Supporting survivors (Women exposed to violence)	Awareness video
19	How to support burned survivors?!	Damietta Medical Students' Association (DMSA)	Faculty of Medicine, Damietta University	Supporting survivors (Burns)	Advertisement & Awareness Video

20	HIV doesn't kill me, but you did!	Damietta Medical Students' Association (DMSA)	Faculty of Medicine, Damietta University	HIV Patients	Movie Review & Awareness Video
21	Mental Health Stigma	Egyptian Medical Students' Association Menoufia (EMSA)	Faculty of Medicine, Shebin al-Kom, Menoufia	Mental Health	Photo
22	Stigma is out of our lives	Fayoum Medical Students' Association (FMSA)	Fayoum University Teaching Hospital	Mental Illness: Depression	Infographic Video
23	We empower: Sleep Analysis!	Egyptian Medical Students' Association, Minia (EMSA)	Faculty of Medicine, Minia University	Sleep Analysis Patients	Talking head awareness video
24	Be the Change: Together Against Stigma - SCORP	Kena Medical Students' Association (KMSA)	Faculty of Medicine, South Valley University, Qena	Blindness	Acting Video
25	Creating peaceful and equal world ZMSSA Stories	Zagazig Medical Student Scientific Association (ZMSSA)	Faculty of Medicine, Zagazig	Accepting Weakness	Interview

Questionnaire Finding

The research questionnaire aims to analyze the social impact of multimedia content (videos, infographics, and photos) shared under the Facebook hashtag *#Together_Against_Stigma* on medical society members. The goal is to evaluate how multimedia pieces enhance social media capital (SMC) value chain; bonding, linking, and bridging, to fight disease stigma in the Egyptian healthcare community of medicine faculty, and to what level they achieve SMC mediators; self-presence, Internet self-efficacy, and self-affirmation behavior.

The main relationships addressed in the 1st question: "**After getting exposed to multimedia under hashtag #Together_Against_Stigma, do you consider yourself:**

care provider, health therapist, or treatment provider?" are discussed from medical society member point of view towards themselves. While, relationships with stigma association discussed in the 2nd questions: **"Your insight towards your patient can be described as: service user, patient in need for health guidance and medicine prescription, or sick person needs healing treatment"** are inspired from patients' reaction.

TABLE 4. RELATIONS OF MEDICAL SOCIETY AND PATIENTS AFTER EXPOSURE TO MULTIMEDIA, SMC VALUE CHAIN, AND STIGMA ASSOCIATION

Term	Academic Definition	Current Research findings	SMC Value Chain	Stigma Association
Care Provider (M)	Professional medical society member provides biomedical & psychosocial support (WHO, 16), (Epstein & Street, 11)	Relationship Centered (Patient)	Strengthen External Ties (Bridges)	LS
Health Therapist (M)	Professional medical society member focuses on functional & physical support (IOM, 01), (Pescosolido, 13)	Functional Centered (Health Equity)	Strengthen Hierarchical (Linkage)	MS
Treatment Provider (M)	Professional medical member provides biomedical support (Conrad & Barker, 10)	Solutions Centered	Strengthen Internal Ties (Bonds)	HS
Service User (P)	Self-insight of professional medical society member towards their patients as health service users and consumer (Beresford, 19)	Solution Centered (Dehumanization)	Strengthen Internal Ties (Bonds)	HS
Guidance & Medicine Receiver (P)	Self-insight of professional medical society member towards their patients as health guidance and medicine prescription receiver. (Mead & Bower, 2000)	Relationship Centered (Patient)	Strengthen External Ties (Bridges)	LS
Treatment Receiver (P)	Self-insight of professional medical society member towards their patients as healing treatment receiver (Parsons, 1951), (Link & Phelan,01)	Solutions Centered	Strengthen Hierarchical (Linkage)	MS
(M) stands for how medical society member (Student, Alumni, Worker) consider themselves after getting exposed to MSA Facebook page multimedia under hashtag *#Together_Against_Stigma* **(P)** stands for medical member insight towards their Patient Medical society member stigma association to the patient: **High Stigma (HS):** Depersonalize patients' status – **Moderate Stigma (MS)**: Deals with the illness not with patient status – **Low (LS):** Recognize patients' status				

Low stigma association strengthen the external ties among the medical society members and build bridges of relations in which patients feel that they are served well with careful guidance receipt.

Among respondents identifying themselves as care providers (31.4% of sample), 82% strongly agreed their role combined biomedical and psychosocial support, aligning with WHO's (2016) holistic care framework. These participants, primarily alumni and senior clinicians, framed patient interactions as "relationship-centered" (Epstein & Street, 2011), with 73% explicitly rejecting the term "treatment provider." Their responses emphasized bridging capital, such as collaborating with mental health NGOs, and correlated with low stigma attitudes (e.g., 91% used "patient needing guidance" vs. "sick person"). This group also produced 68% of user-generated campaign content, suggesting their professional identity motivated active advocacy.

Respondents identified themselves as treatment providers (25.7% of sample), 67% primarily characterized their role through biomedical interventions, focusing on acute care solutions. These participants, predominantly interns and junior residents, framed clinical encounters as "case-centered," while 56% explicitly rejected incorporating psychosocial support into their professional identity. Their responses emphasized strengthening hierarchical linkage through peer networks, yet correlated with persistent stigma markers (67% used "sick person needing healing" versus just 22% adopting "patient needing guidance" terminology). The findings underscore how early-career specialization in pathology-centered approaches may sustain high stigmatizing frameworks unless addressed through targeted training interventions.

The engagement of medical society members with SMC contents for reducing disease stigma reflects on the SMC mediators: self-presence, Internet self-efficacy, and self-affirmation; by constructing their beliefs which leads to attitude behavior. The following table shows the three mediators as defined by the literature and their relation to the questionnaire findings.

Term	Academic Definition	Current Research findings	SMC Value Chain	Affected medical society member
Self-presence	The sense of being virtually existed and authentically engaged with the case (Nowak & Biocca, 2003)	Build professional digital identity & online persona with content creation	Bridges	Student
Internet self-efficacy	The sense of confidence in using Internet as a tool for awareness and advocacy (Eastin & LaRose, 2000)	Build professional ways to support patients with stigmatized diseases	Bridges	Page admins
			Bonds	workers
			Linkage	Students
Self-affirmation	The sense of maintaining self-values (Steele, 1988)	Reaffirm empathy values towards patients	Linkage	Alumni
			Bonds	Workers

The third question: "What is your new vision about your patient after Facebook hashtag participation; with multimedia creation or awareness exposure?"

A total number of eight respondents; who create MSA Facebook multimedia content stated that: "I feel that I extent my clinical role to the virtual environment with enjoyable way, so followers can get the message of disease stigma and its effect on the patients" (Portsaid MSA page), and "My role as Facebook page admin makes my task as a doctor easier while dealing with my patients in real sessions" (Fayoum MSA page).

Four respondents from alumni and workers stated; "I feel I am a companionate doctor" (Suez MSA page), "after reading the patients' stories on Facebook page, I act with more empathy with my actual patients" (Zagazig MSA page).

A total number of six respondents, mostly students mentioned some actualities after following multimedia; "I had to learn from Facebook that 50% of diabetics hide their condition due to shame," "We Egyptians call depression *weak nerves*, now I may call it *case needs attention*," and "Seeing a hepatitis C patient's video diary broke me. I used to glove up excessively with them. Now I shake hand first." (Minia MSA page)

Social Network Analysis

This study examines the social media engagement and content performance of six medical student associations; Fayoum Medical Students' Association (FMSA), Helwan Medical Students' Association (HMSA), Zagazig Medical Students' Association (ZMSA), Al-Azhar Medical Students' Association (AMSA), Suez Canal Medical Students' Association (SCMSA), and Students' Scientific Society Kasr Al Ainy (SSS Kasr Al Ainy) from April 13, 2025, to May 12, 2025. The findings provide insights into user interactions, post effectiveness, and publishing behaviors that contribute to audience engagement.

Engagement Metrics and Performance:

The analysis reveals notable differences in audience engagement among the associations: FMSA recorded 165 total engagements across six posts, averaging 27.5 engagements per post, with a 129.17%-page growth rate, while HMSA had 192 engagements across nine posts, averaging 21.3 engagements per post, but experienced a -59.83% page growth rate.
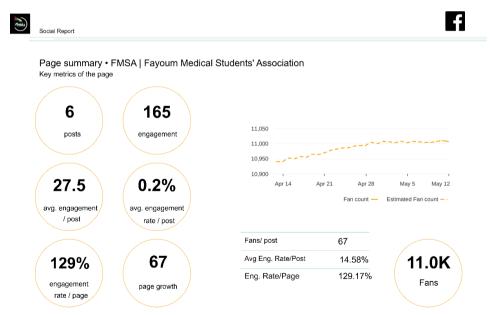
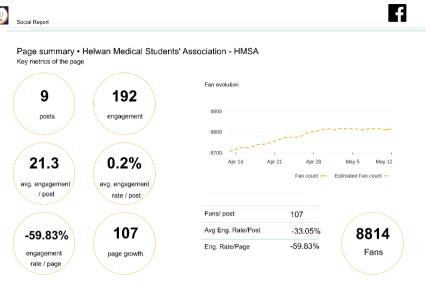FIGURE 4. FAYOUM MEDICAL STUDENTS' ASSOCIATION FACEBOOK PAGE - KEY METRICS - CREATED BY SOCIALINSIDER

FIGURE 5. HELWAN MEDICAL STUDENTS' ASSOCIATION FACEBOOK PAGE - KEY METRICS - CREATED BY SOCIALINSIDER

ZMSA showed moderate engagement, with patterns differing in content effectiveness, AMSA, known for large-scale initiatives, achieved high reaction counts, signaling strong audience support, SCMSA recorded 81 total engagements across five posts, experiencing a 52.91% decline compared to the previous period, and SSS Kasr Al Ainy reported no posts, engagements, impressions, or reach during the analyzed period.
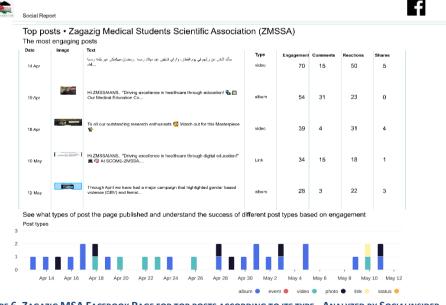

FIGURE 6. ZAGAZIG MSA FACEBOOK PAGE FOR TOP POSTS ACCORDING TO ITS TYPE - ANALYZED BY SOCIALINSIDER
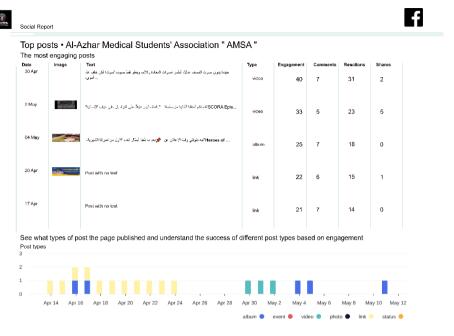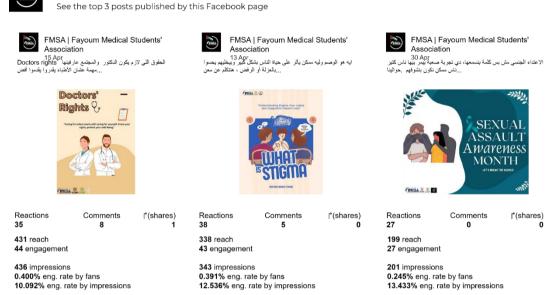
24

FIGURE 7. AL AZHAR MSA FACEBOOK PAGE FOR TOP POSTS ACCORDING TO ITS TYPE - ANALYZED BY SOCIALINSIDER

While HMSA had slightly higher total engagement, FMSA demonstrated stronger audience interaction per post, and SCMSA showed lower overall engagement compared to past performance. The absence of activity from SSS Kasr Al Ainy suggests a decline in engagement compared to previous periods.

Content-Type Effectiveness:

Each association relied heavily on photo, album, and video posts, but their engagement patterns differ: FMSA: Albums generated 65.45% of total engagement, followed by photos (22.42%) and videos (12.12%). Albums were the most successful post type, averaging 36 engagements per post, while HMSA: Photos accounted for 71.88% of engagement, while albums contributed 28.13%. Photos achieved the highest engagement, averaging 23 interactions per post.

FIGURE 8. FAYOUM MSA TOP 3 POSTS FIGHTING STIGMA WITH REACTION AND REACH – ANALYSED BY SOCIALINSIDER TOOL

ZMSA engagement was distributed more evenly between post types, with educational content performing best, AMSA leveraged large-scale events and awareness campaigns, with visual storytelling driving engagement. SCMSA relied on albums (60%), photos (20%), and reels (20%), with reels showing strong potential for future engagement., SSS Kasr Al Ainy: posted no content during the period, leading to zero recorded engagement.
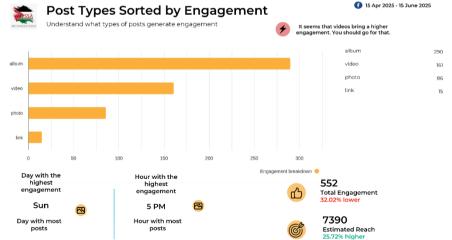

FIGURE 9. ZAGAZIG MSA FACEBOOK PAGE REPRESENTS POST TYPES SORTED BY ENGAGEMENT - ANALYZED BY SOCIALNSIDER

This suggests that FMSA's audience prefers albums, HMSA's followers engage more with individual photos, ZMSA and AMSA benefit from diverse content formats, and SCMSA could leverage video content more effectively. Kasr Al Ainy's inactivity indicates a need for strategic re-engagement efforts.

Sentiment & Audience Reactions

The analysis of user reactions highlighted a clear preference for positive sentiment:

FMSA received 105 "Love" reactions, the dominant form of engagement, with no negative reactions, while HMSA: Recorded 149 "Love" reactions and one "Wow" reaction, also with no negative responses. ZMSA: Encouraged discussion and constructive feedback, AMSA: Generated strong emotional responses, particularly around social awareness initiatives, SCMSA: Top posts received an average of 19 reactions, six comments, and two shares, with Sunday at 8 PM being the peak engagement time, and finally SSS Kasr Al Ainy: No engagement or sentiment trends were recorded due to inactivity.
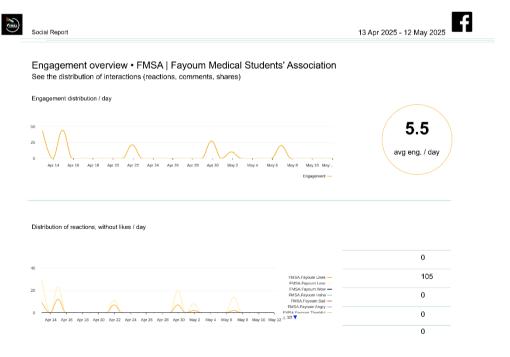

FIGURE 10. DISTRIBUTION OF INTERACTIONS ON FMSA FACEBOOK PAGE - CREATED BY SOCIALINSIDER

This reflects strong community support and positive reception across all active associations, with AMSA leading in emotional engagement and SCMSA benefiting from timed posting strategies. While SSS Kasr Al Ainy Facebook MSA page's inactivity suggests lost engagement potential.

Publishing Behavior & Best Posting Time

The effectiveness of posts also correlates with publishing patterns: FMSA: Highest engagement on Tuesdays at 5 PM, while HMSA: Peak engagement on Fridays at 10 PM. On the other hand, ZMSA: Steady engagement, with interactive sessions enhancing visibility, and AMSA: Leveraged primetime posting hours to maximize audience impact, SCMSA: Sunday at 8 PM saw the highest engagement, while most posts were published on Tuesdays at 9 PM, and SSS Kasr Al Ainy: No posts were published during the period.
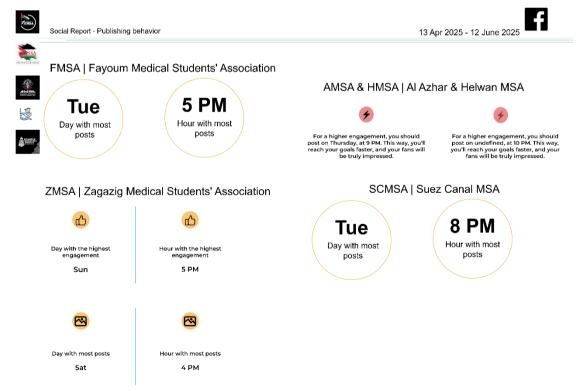

FIGURE 11. PUBLISHING BEHAVIOUR FOR 5 MSA FACEBOOK PAGES

These results suggest that timing plays crucial role in post-performance, with each association benefiting from specific posting schedules tailored to their audience. For SSS Kasr Al Ainy, re-establishing a consistent publishing schedule could be key to reviving engagement.

Additional Insights

Regarding User Activity and Comments: FMSA averaged 5.5 engagements per day, while HMSA averaged 6.4 engagements. SCMSA recorded 19 comments, five shares, indicating moderate audience interaction. SSS Kasr Al Ainy had no recorded activity.

Post Frequency: FMSA posted less frequently (0.2 posts per day) compared to HMSA (0.3 posts per day). SCMSA, with only five posts, showed a decline in posting frequency, which may have contributed to reduced overall engagement. SSS Kasr Al Ainy did not post at all during this period.

Fans & Reach: SCMSA maintains a 10.3K fan base, with an estimated reach of 535 people per post and 871 impressions. SSS Kasr Al Ainy has a larger audience (27K fans) but recorded no reach or impressions due to inactivity.
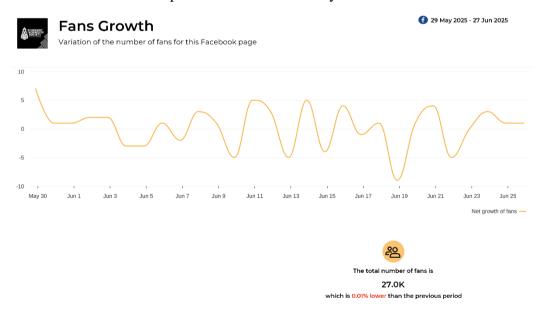

FIGURE 12. FANS GROWTH FOR SSS KASR AL AINY MSA FACEBOOK PAGE - CREATED BY SOCIALINSIDER

Social Media Engagement and Disease Stigma Discussion

In this study, social media engagement serves as an indicator of public awareness, advocacy efforts, and community reactions to medical topics. Regarding community support and engagement; associations with higher engagement rates (FMSA, HMSA, AMSA) show stronger community involvement, which is critical for destigmatizing diseases through education and advocacy. Positive sentiment reactions, such as "Love" reactions, indicate that followers are supportive of discussions around health conditions. The lack of negative reactions suggests relatively accepting audience, but it may also highlight a need for more active conversations on challenging stigmas.

Content themes and stigma representation within ZMSA and AMSA use diverse content formats, including educational posts and large-scale awareness campaigns, which facilitate open discussions about stigmatized conditions. SCMSA's use of reels suggests an opportunity to leverage short-form video storytelling to humanize patient experiences and reduce stigma. And Kasr Al Ainy's inactivity (0 posts and engagement) reflects a missed opportunity to contribute to social discussions surrounding disease stigma and healthcare discrimination.

These findings indicate that FMSA excels in engagement per post, while HMSA achieves higher overall engagement through frequent posting. ZMSA fosters constructive discussions, AMSA leads in large-scale awareness efforts, and SCMSA holds strong potential, particularly through video and strategic posts. SSS Kasr Al Ainy, despite having a substantial fan base (27K followers), showed a complete lack of activity and engagement, highlighting an urgent need for content revitalization. The strategic use of albums, photos, mixed content formats, and optimized posting times can further improve engagement across all associations. Low engagement or absence of discussions on platforms (like SSS Kasr Al Ainy) suggests that some student associations may not be actively addressing stigmatization through their content. Associations with higher reach and impressions (SCMSA, AMSA) have a greater capacity to shift societal perspectives, yet strategic content diversification is essential for deeper engagement.

Conclusion

The proposed Social-Media Capital (SMC) Framework offers a structured approach for understanding how the Egyptian medical societies, particularly Medical Student Associations (MSAs), can influence social media to combat disease stigma. By integrating the three core pillars (Bonds, Bridges, Linkages) with SMC key mediators (social presence, Internet self-efficacy, self-affirmation), the framework explains analytical mechanisms using digital engagement to study attitude and behavior change.

The medical society's SMC structure strengthened pillars at varying levels. First, bonds (high stigma) appeared among peer networks (e.g., student-alumni groups) and showed an increased in collaboration (82% of care providers). Bridges of medium stigma was limited by professional medical members (e.g., surgeons rarely interacted with psychiatrists' content). Linkages, that varies between low-medium stigma, ties the Egyptian medical society to NGOs/policymakers, however their neutral responses required their dependency on institutional support (only 33% of respondents).

The mediators critically shaped pillar efficacy; in Internet self-efficacy: high-efficacy users (page admins) expanded bridges through cross-institutional sharing. Regarding social presence: content creators reported stronger bonding capital (as stated; "I felt being part of together against stigma campaign"). Self-affirmation of medical alumni used campaign participation to reinforce professional identity, and strengthening linkages to institutional policies (as conveyed; "My posts were cited in faculty page").

Finally, *#Together_Against_Stigma* demonstrated that content design matters, because patient-centered content helps in forming public opinion to reduce stigma. The increase of structure limits of medical society hierarchies' reach that recommends formal partnerships to maximize bridges/linkages. Also, mediators are the main catalysts to invest in digital literacy (self-efficacy), in addition to identity affirmation that amplify SMC's anti-stigma potential.

Recommendations

For further trials in combating disease stigma using social media among the Egyptian medical society, the following social media strategies could be implemented:

- Sharing patient testimonials and personal experiences through humanized storytelling can break misconceptions about socially undesired diseases.

- Creating educational posts, live discussions, and interactive Q&A sessions can challenge biases as it will consider effective medical awareness campaigns.

- Encouraging audience participation, such as comments, shares, and discussions, can foster a more open dialogue.

- Using SMC Framework as proposed relationship graph for resesarchers studying online engagement and initiatives for reducing disease stigma.

Further Studies

- Studying the three main determinates that stigmatize health equity; as the society failed to achieve health equity when the main three determinates aren't achieved among the patients.
    o Wealth: the inability of patients to get the suitable treatment due to financial status
    o Power: the unavailability of treatment places in hospitals or due to doctors' preferences
    o Prestige: the humiliation of patients' feelings towards their illness; depending on their social class, or the way they speak or dress.

- measure the level of agreement among medical students and alumni who are exposed, participated, or watched videos under Facebook hashtag "*Together_Against_Stigma,*" as well as the **level of time efficiency** in taking the decision of get alerted of changing their stigmatizing behavior.

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