



Designing A Framework for Categorizing Health-Subject Posts in Social Media

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Abstract: Posts with health content are shared on social networking sites by government agencies, fan clubs or social marketers on a daily basis. These posts play an important role in informing people and linking them on social networks in order to share their ideas, change their behavior, or contribute to their diseases. Despite the prominence of the role of social networks in social marketing, so far this field has not been formally analyzed in the literature. Therefore, the purpose of this study is to provide a formal analysis of posts with health content and to propose a framework for categorizing them based on their message content. With this in mind, the study performed qualitative content analysis involving three interrelated coding procedures. First, the study reviewed earlier works in the social marketing literature and more recent analysis of the function of social networks to improve health to identify initial coding categories (deductive coding). Second, the study drew together systematic inferences from a purposive sample of health-subject posts ($n = 342$) to derive initial coding categories (inductive coding). Finally, the study implemented a double-coding procedure on a probabilistic sample of health-subject posts ($n = 264$) to validate the initial coding categories (validation coding). Collectively, the three coding procedures produced 7 exhaustive and mutually exclusive categories of health-subject posts. The proposed classification provides a comprehensive framework for thinking about posts with health content. For social marketers, it provides guidance to create the stream of content necessary to stimulate daily interactions in social media channels. For researchers, it offers a solid conceptual foundation to categorize and measure health-subject posts.

Keywords: Social media marketing, health-subject post, Content strategy, Social marketing.

INTRODUCTION

Nowadays, by improving the technology and availability of internet in many areas, social media as one derivative of this age has obtained a specific place. By the emergence of web, social media has provided users with an environment to interchange their information through weblogs, micro weblogs, wiki's, RSS feeds, social networks and some sites for sharing videos [1]. According to Andre Kaplan and Michel Haenlein, social media are a group of internet-based application programs by which users are able to create and interchange produced content by relying on the available technological bases on the web [2]. Social media emerged to link people virtually throughout the world, but it now plays a pivotal role as an influential tool in public minds. The media act as online formation-oriented bases which gather users regarding their specific characteristics, from their gender to their specific group interests.

The health area has been under the influence of the social media and it experiences the adaptation with the new technology. Although interpretation and creating issues related to the health and hygiene was possible

from the emergence of internet [3], but the development of social media technology such as Face book and Twitter has highly facilitated the accessibility to this information [4]. People take part in social media for finding health information, using information of discussing groups concerning a specific issue, participating in specialized forums and to describe their disease [5]. Nowadays, patients much more rely on the internet than their doctors as an information resource for health care and the emergence of social media had greatly helped to this issue [6].

Increasingly interest for social network has created an unlimited opportunity for medical researchers and enthusiasts for social aspects of health in order to establish social and health interactions as well as reinforcing and promoting health attitudes [7]. Based on conducted studies, one third of adults use social media to have access for health information and approximately 80% of physicians who hold online consultation utilize social networks for creating and sharing medical content [8]. According to Fox report [9], more than a half of consumers, 53% of elderly including 57% from the X generation (born between 1961-1981) and 56% from the Y generation (born between 1981-2001), declared that they have used online services to access information. Indeed, browsing for health information is an online desirable activity among adults after using the e-mail services and searching information in browsers [9]. Using internet to find health information has remained constant during the last decade in England and 70% of users have used internet to obtain information [10].

Million people now are participating in social media including, Face book, Youtube, Instagram, Pinterst and Twitter. According to a report in December 2014, approximately 81% of American adults with an 18 years average or more use internet, and 73% of them was being a member in social media [11]. Again, a similar statistics is available for other developed countries [12]. Health information providers cannot deny changing the behavior of information seekers in the area. In 2012, 72% of internet users acknowledged that they have browsed health information [13]. According to results, active members of the health area need to go where people live [14] and now, social media provides users with an environment for doing their activities.

Content resources related to health are various. The area includes issues from the health life style to information of patients about chronic disease as well as management of sensitive and critical disease [15]. Ziebland and Wyke [16], provided a brief outline about available health contents and information, from recorded videos in the Youtube to guidance on making decision as well as people opinion about health content (chronic disease, healthful life style and such like) [16]. Although social media show a considerable potential as a tool for improving health and education, but similar to traditional media the health promotion needs to be applied carefully and it is likely not to achieve expected outcomes [1].

Regarding accomplished studies in the area, a few qualitative researches have been done to assess and provide a comprehensive framework related to health information content in the social media. Accordingly, the present research aims to design a framework for categorizing health messages in the social media on the basis of the message strategy in a form of a guide for active members of the health area. The message strategy in an advertising means “what we should say” [17]. The message strategy is responsible to determine the content domain of advertising or other forms of content [18]. According to the definition of message strategy, the present research aims to analyze and classify health messages in a meaningful and conceptual category.

2. Literature review and research theoretical foundations

2-1. Message strategy

The message strategy is a guidance tool to ensure the content domain of advertising [18]. The message strategy provides a framework to adjust demands of the marketer and customer; it means what a marketer wants to receive and what a customer wants to hear [17]. According to Ashley and Tuten, the message strategy seeks to facilitate customers understand during advertising process [19]. In past, the concept of message strategy was advantageous for analysis and categorization of television and newspaper advertising. Laskey [18] suggested a bifurcated typology of the message strategy entitled “informational and transformational bifurcation” [18]. Accordingly, the informational message strategy manages functional aspects of products or services while the

transformational message strategy considers enjoyment aspects of a service or product. Taylor [17] proposed the transformational and ceremonial category. According the categorization, the transformation aspect in the message strategy considers a functional and public approach, but in the ceremonial aspect the emotional approach is considered.

2-2. Social media

The main idea of developing social media is not complex. Indeed, the main reason for the emergence of such a concept could be searched in primary purposes of internet developers. However, it seems that, there is a kind of ambiguity concerning the nature of social media, its difference with concepts related to the web as well as UGC (User Generated Content) among managers, researchers and related active members. In the first time, the term “web” was applied in 2004 to introduce a method by which software manufacturers and final users used the global web like a platform in which not only people could create content and programs but also they were revised and balanced in a participatory environment. Although the web represents ideological and technical bases of the social media, the UGC is proposed as a set of alternatives by which people can use social media. Created content by the user is also a term which generalized in 2005 and it mostly applies to describe various forms of media content so they could be available publically and they are produced by final users. The created content by the user needs to cover three main necessities as follow:

1. They should be available on the website for public or they need to be published on the available social networking sites for the selected group.
2. They need to show a specific amount of creating efforts.
3. Finally, they should be created out of daily routines or professional practices [2].

According to categorization and distinction of the web and UGC concepts, now we can offer a clear definition of the term “social media”. The social media is a set of internet-based application programs created on the basis of the ideological and technical foundations of the web concept and they provide an environment to create or exchange content by users [2].

In order to develop the research, we will try to classify social media. To create such a classification, we will act based on media research theories (theories about the social attendance and media richness) and social processes (theories related to the self-expression in the daily routine and self-closure) as two main factors of the social media. According to the social attendance theory, media are distinguished based on their social attendance level. The social attendance of a media is considered as its capability for audio, video and physical communicative development between two individuals. The media richness is considered as another theory which is highly close to the social attendance theory. The media richness is defined as the amount of information which is transferred in a certain time span. The next criterion used for classifying social media underlines the social aspect of the media. According to the theory of “self-expression in the daily routine”, in all social communications, people try to pursue others’ conception about themselves. On other words, communications are established so as to attract others attention through influencing them and it is conducted based on people desire for creating a picture consistent with the individual personality. Usually, it is fulfilled by the self-closure, so the self-closure is a kind of conscious or unconscious manifestation of personal information like thoughts, emotions etc, in order to create a desired image of an individual for others. The mentioned two-dimensional compound will lead to the classification of all kinds of social media (table 1).

Table 1. The classification of social media

Media richness/ social attendance				
High	Medium	Law		
virtual social worlds	social networking sites	Blogs	High	The self-disclosure rate
virtual game worlds	content communities	Collaborative Projects	Law	

Accordingly, all social media are categorized in six groups including, blogs, social networking sites, collaborative projects, content communities, virtual game worlds and virtual social worlds [2].

2-3. Social media marketing

Social media are now an inseparable part from the modern society and the social network is a large industry. In the social media, responses have been quicker over time and reactions are highly tangible in each time and place so a door opens to suitable facilities just by a click and it provides a deep understanding for questions. Accordingly, social media are a compound of technology and social interactions and it leads to increased users participation. The affection for establishing a business in social media expresses itself intangibly.

The Social media marketing includes an effort to use social media to convince a company's customers to use their valuable services and products. The main aim of the social media marketing is to create a customer-oriented business based on the company's influence so as to develop or manage the business. The main trouble in the social media marketing is in the business perspective. The social media marketing is unusually time-consuming. The competition for the social media marketing is developing over time. Compared to large companies such as Dell, Microsoft and hp which effectively use the social media marketing and the company allocate a budget for the area as well as a large number of personnel are trained for it, small companies don't have such financial resources to use for the competition in the social media marketing. The social media marketing is an internet-based strategy that organizes the business through websites, films and interaction with the target community. No one can claim that the social media marketing is fraught with advantages but like other life aspects it has good and bad points as well.

2-4. Health marketing beyond the social media marketing

There are several alternatives to compound social media with advertising designs of the social marketing. Compared to the traditional marketing, the improvement of technology and development of social media offered unlimited opportunity for active members of the health area to gain much more access to people. Planners of the health area need to promote their creativity and efforts to employ these tools [20].

5.2 social media and health messages

Social media are used variously thanks to their attributes as follow [12]:

1. To hear conversations in social media to find people demands
2. To identify and employ influential individuals and organizations to form conversations and to develop mutual communications
3. Responding and to make a comment about posts in social networks
4. Presenting creative alternatives such as online chats so as to promote the communication between information seekers and information providers.
5. To encourage social media users to develop and exchange information

The health social media includes a website in which people enjoy its health and hygienic advantages in various levels. These websites provide their users with a variety of services such as emotional support, information exchange, inquiring from physicians and assessing clinical experiments [21]. Providing online forums is another internet-oriented service to share patients' experiences, to achieve information about a specific disease as well as to establish communication among patients. The fundamental subjects in these forums are about cancer, rare disease, diabetes, AIDS and infertility [22].

According to statistics, annually 10 million smokers browse in internet to find a solution to quit smoking. As a result, this kind of browsing tends to lead people to use artificial alternatives to stop smoking. One of them is the "*Quit Date Wizard*" application program in the Facebook. The program has been epidemically developed among people and users tend to recommend it to others. So, informing people would be developed largely thanks to the system and it can be communicate with a broad range of users " [23]. The "*Patients Like Me*" online

platform in 2006 was created to support the information exchange among patients stricken to chronic disease [24]. Patients can import information about symptoms and treatments of their disease, so everyone can watch their own disease trend and to correct their behavioral habits.

3. Methodology

The present research is a qualitative study and it was done by analyzing content. The content analysis has accomplished systematically on raw data so as to achieve a valid conclusion [25]. The analysis of qualitative content, especially for the mass of data will result in conceptual categorizations [26].

Sampling

During sampling, researchers are faced to three main decision-makings in studies concerning social media. The first one is to select a social medium among a mass of media. For the present research, instagram's health pages were chosen as a reference thanks to their high activity as well as adequate and highly participation rate of people in them. The second main decision for sampling is to select application pages as a sample. In the present research, two independent groups were sampled; one of them for concluding the categorization that is drawn out through content analysis and the second one is employed to validate the first group. To conclude and pretest the first categorization, a purposeful sampling was done for health content pages (n=20). The pages and their related issues indicate a mass of health contexts. Related pages were searched regarding the topic literature and available health keywords such as health, hygienic, diabetes, chronic disease, cancer and such like. Again, to validate the primary coding some probabilistic samples were chosen from these pages (n=15).

After selecting an appropriate sample, the third main decision making was to determine the number of posts which need to be assessed in each health page. It ensures the required generality for content analysis and its efficiency with respect to categorization and coding. In order to study posts, all other related posts from selected pages were assessed in a 4-weeks time span (from the 1st to 31st of May, 2017). To sum up, in the mentioned time span 342 and 264 posts were checked from the first and second sampling categories, respectively.

Coding phases

Our coding procedure draws on qualitative content analysis, which entails "the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes and patterns" [26]. Qualitative content analysis extracts both manifest and latent meanings following a systematic and transparent analysis of raw data [25].

Broadly speaking, the qualitative content analysis is begun by the definition of an analysis measure which is comprised of the basic unity of raw data for analysis and coding [27]. Sentences, paragraphs, the full text of documents or a full interview could be considered as the analysis unit [28]. In the present research, each searched health post and all its information such as texts, pictures, films, links etc, was considered as an analysis unit.

The next step is to study the available literature in order to determine initial coding categories. The process is known as a deductive coding. The method is employed when there is a defective literature about the subject and it is expected to become complete by more analysis [26]. Accordingly, two authors assessed health habits and behaviours in the context of the social marketing literature so as to determine the appropriate available coding for categorizing health posts. The study was exclusively focused on the social marketing literature in order to promote the health and to assess functions of social networks for the health promotion. Eight primary coding categories were produced through these literatures.

The next step is known as the inductive coding in the content analysis literature. Here, a new coding category is drawn out from raw data. The phase is accomplished when the researcher tries not to repeat the previous coding [26]. Accordingly, the content analysis was done for the first sampling category (n=342). Thus, two authors assessed available information in each post carefully so as to understand the main transmitted message. Key words, themes and basic ideas were discussed by two authors. When the main message was consistent with the deductive coding, health posts were also coded on its basis. But a new coding category was

recommended when the main message lacked such a consistent. By using this method, four new coding categories were created. By developing the process of code deduction from posts and thanks to much more available information, categories were revised so as to achieve a better conceptual clarity. After compounding the category of complementary codes and in order to summarize them the number of determined coding categories was reduced from 12 to 7 coding categories. In this phase, a coding instruction was prepared so as to create common rules for coding validations.

In the fourth and final phase, both authors coded the second validation sample (n=264) again. It is recommended that, authors not to communicate with each other so as to make their coding decisions independently [29].

Once the validation coding was finalized, inter-coder reliability coefficients were calculated using Perreault and Leigh's (1989) I_r^1 , which is a more conservative inter-coder reliability coefficient than percent agreement [30]. As reported in Table 3, the two coders achieved quite robust agreement levels ($I_r > .8$). Percent agreement is reported for baseline reference. Disagreements were resolved using consensus.

4. The proposed categorization for health messages

By employing a systematic coding method, seven categories for health messages was obtained in the present research. There follows each category with some examples of empirical data and new insights into related literature are described.

Table 2. Coding table

table 1-coding table					
(deductive coding)	(inductive coding)	Final coding categories	% of observation	I_r	% agreement
emotive language	-	emotional posts	33	.79	74
emotional story telling	-				
Humor ,jokes	-				
Product and service attributes, benefits	-	functional posts	27	.81	81
-	Branded products				
-	How to use?	educational posts	24	.91	90
-	Did you know				
Sensory stimulation	-	Experiential posts	12	.83	85
Behavioral stimulation	-				
-	Current event	Current event	2	.91	97
campaign posts	-	campaign posts	2	.81	96
Celebrities post	-	Celebrities post	0	.87	97

4-1. Emotional posts

Emotional posts are those messages seek to arouse people feelings. They are able to create an adequate answer by the use of a language fraught with feelings, story, irony or stating legible things. The main aim of the posts is sending a message to addressee through establishing good emotional communication with them. The posts include 33% of the validation sample posts and they could be categorized into three groups. The first category employs a language fraught with emotions to provoke feelings. The implication is transferred through symbols

¹ $I_r = \{[(Fo/N) - (1/K)][k/(k - 1)]\}0.5$. for $Fo/N > 1/K$, where Fo = observed frequency of agreement. N = total number of judgments and K = number of coding categories.

as well as pictures or communicative words. They could be including love, hobby or fear. Below is an example of the posts in the “*medicine_in_picture*” page so as to encourage people to give up smoking (Fig.1).

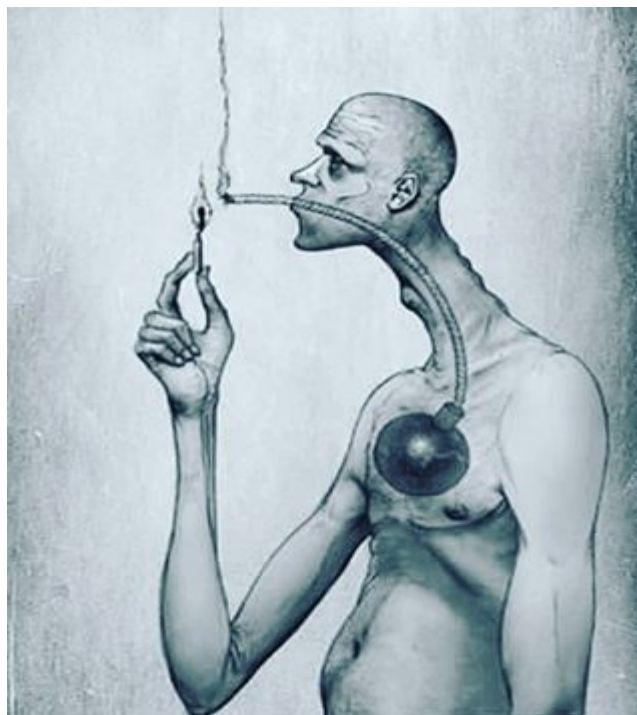


Fig 1. One of the posts in the “*medicine_in_picture*” page which was employed a mould fraught with feelings to encourage people to quit smoking

In the next group the emotional narration is used to express subjects. In general, detailed issues are provided in a story or video form. Stories are mostly about people who want to show a health message or a behavioral alternation concerning good health habits. Below is an example of these posts in the “*cancer_stories*” page, which was written about the biography of one of its followers:

"I hope everyone remembers this beautiful Cover Girl Talia! This gorgeous young lady could not be stopped from her wonderful dreams! She knew things could get bad but she wanted to stay positive about how she did have a life instead of no life! But she was battling cancer for pretty much her life knowing she had a 50 50 chance of living or dying! But that didn't stop her from having a normal life!"

Or for example, in pages related to weight lose there are several pictures of people who has lost their weight by following a specific diet, and they share their pictures before and after this process. The following picture in the “*weight_loss_transformations*” page can be mentioned which is highly visited by its followers (fig.2).



Figure 2. A shared post in the “*weight loss transformations*” page in which a man tries to arouse people feelings by narrating his weight lose story

And finally, the third group uses funny subjects for exciting people and stating issues. Below is an interesting example of this group in the “*fitness_daily*” page which people are encouraged to lose their weight and to have a good figure by a funny picture (fig.3).

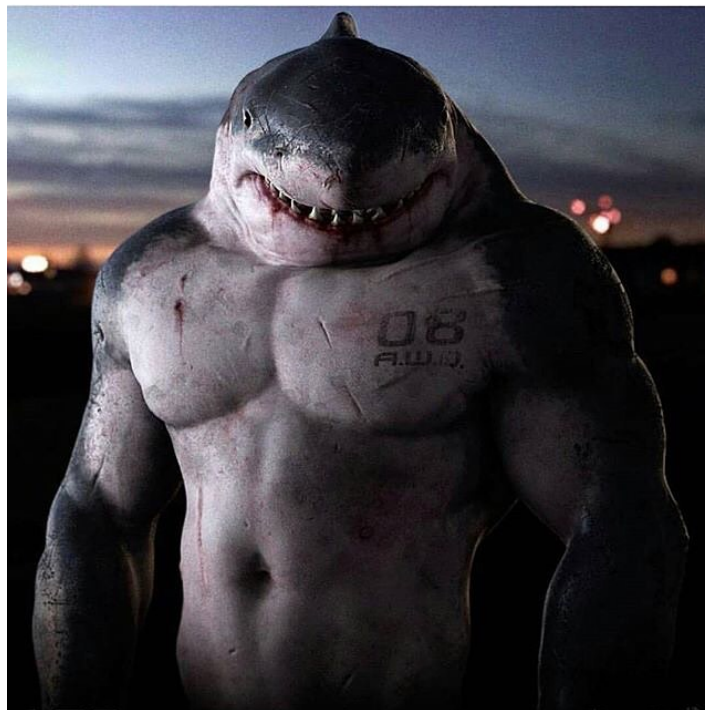


Figure 3. A shared post in the “*fitness_daily*” page which seeks to arouse people feelings and encourage them to have a lithe body

To sum up, it can be said that three ways are used to express an idea in emotional posts including, an explanation fraught with feelings as well as fictional and comic expression. Again, it should be noted that, in some cases, emotional posts are combined with other posts (training, functional etc) to express an idea.

4-2. Functional posts

In the subject of social marketing in the health domain, according to Thackeray [20], it can be used to change a behavior (physical activity), idea (recovery), tangible items (helmet for motor cyclists) and services (mammography screening). Hence, functional posts tend to assess a tool or a device as well as to describe its advantages for the health promotion. Functional post related to using condom is a case in point. Glucometers or pedometers could be considered as good examples as well. Indeed, 27% of health messages in the validation sample are comprised of functional posts and they could be classified into two groups.

The first group is comprised of those posts that advertise a specific tool without recommending a special brand. For example, encouraging youth to use a helmet or condom are a case in point. The second group includes those posts which advertise a specific tool for a specific brand. It means that, not only it recommends using a tool but also it introduces a special brand. Generally speaking, it can be said that, the group of functional health posts provides people with detailed information about a product or a service. Below is an example of these posts (fig.4).



Figure 4. A shared post in the “*hope_love_insuline*” page by the admin which encourages their followers to use a glucometer of a specific brand.

4-3. Training posts

Health training posts tend to seek guiding and informing people. The main aim of the posts is to increase people knowledge as well as to educate them about new skills. According to the categorization of health messages in the validation sample, 24% of the posts belong to this category and generally they are classified into two groups. The first group includes training for using a tool or doing a specific activity. By way of illustration, required training for insulin injection or teaching people to do sporting activities for losing their weight can be mentioned. Below are some examples of these kinds of posts in the “*the chalk board mag*” page in Instagram (fig 5).



Fig 5. The shared photo in the “*the chalk board mag*” page in the Instagram which seeks to teach about body relaxation techniques.

And the second group is about “*did you know*” topics which includes statistical information concerning a specific subject or reporting about a fact. Below is an example of these posts selected from the “*lung cancer awareness*” page (fig.6).

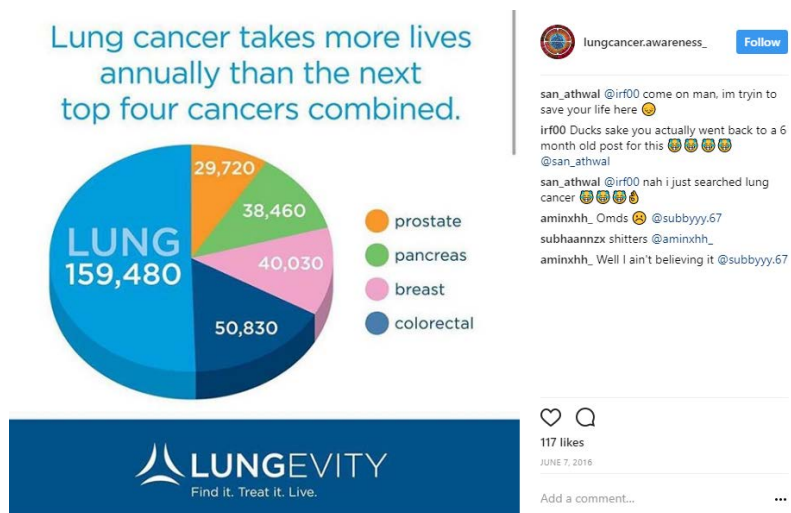


Fig 6. One of the shared posts in the “*lung cancer awareness*” page which reports on the annual fatality of the lung cancer in comparison to other cancers

4-4. Experiential posts

Experiential posts excite people through sharing individual experiments. They include 12% of health messages in the validation sample and they are categorized into two groups. The first group arouses people’s feelings by sharing individual experiences, so it can be said that it overlaps with functional posts to a great extent. The following post is an example of sharing experience in which one of the followers of the “*one drop today*” page tells about controlling his/her blood sugar level in a weekend party. The post could be effectual thanks to arousing diabetic people to control their blood sugar in special ceremonies like feasts, weddings, etc (fig. 7).



Fig 7. A shared photo by one of the followers of the “*one drop today*” page who shows their blood sugar level in a weekend party in an entertaining place

The second group seeks to promote an action by sharing experiences. By way of illustration, consider the situation in which people share their sporting photos in gyms or when diabetic people share photos of their healthy meals.

4-5. Current event

This kind of posts aims to share issues concerning a specific time. In the health domain, mostly there is a specific date for each good habit (for instance, cancer day, diabetes day or condom day to promote the use of condom). The principal objective of the posts is to commence a conversation among users for an event. Their proportion is less than the previous posts (2%). See below for an example. (Fig. 8).



Fig.8: Admin of the “*life_with_t1d*” page shared this post to remind his/her users of 14 November as the diabetes day.

4-6. Campaign posts

The content of this kind of posts implies on participating in an affair or running a test. A way of viewing a viral post in Instagram is through using a hashtag. People invite others to a campaign by selecting a proportionate picture to the campaign and putting a hashtag for a specific word. A successful example of the posts in the health domain could be observed in the #DOINGIT campaign (Fig. 9).

Doing It is a new national HIV testing and prevention campaign designed to motivate all adults to get tested for HIV and know their status. As part of the *Act Against AIDS* initiative, *Doing It* delivers the message that HIV testing should be a part of everyone’s regular health routine to keep ourselves and our community healthy. He’s doing it. She’s doing it. We’re doing it. YOU should be doing it, too



Fig 9. Jaime Pressly shared the #DOINGIT hashtag to encourage her followers to run a HIV test. Generally speaking, this type of posts includes 2% of validation sample posts

4-7. Celebrities post

In this kind of posts, the reputation of well known people is used to state a topic. One of the most used strategies for invoking identification is to use a celebrity. It has been shown that exposure to media personalities over time, even though the exposure is via the media, leads people to develop a sense of intimacy and identification with that celebrity [31]. The categorization was obtained from studying texts and it does not take up any portion in the validation sample.

Discussion and conclusion

Social media websites, such as YouTube, Facebook, MySpace, Twitter, and Second Life® are rapidly emerging as popular sources of health information especially for teens and young adults. Social media marketing carries the advantages of low cost, rapid transmission through a wide community, and user interaction[6]. This crucial linking role notwithstanding, formalized analyses of healthy posts have been lacking in the literature. To help fill this gap, the present study conducted a qualitative content analysis, involving a combination of deductive, inductive and validation coding, which culminated in the development of 12 exhaustive and mutually exclusive categories of healthy posts.

The proposed categorization provides a comprehensive framework for thinking about health content posts. Firstly, it could be used for health centers, organizations and active members of the health domain as well as social marketers as a tool to manage patients through social networks. Furthermore, in a wider range it could be used so as to design a strategic program for health revolution or changing a behavior through social networks. Moreover, the proposed categorization underlines the strategic value of health pages or health fan pages. Again, it reveals that active members of the social marketing with an appropriate planning and administration can invests on the pages to achieve main purposes of the social marketing that the common wealth is its pinnacle.

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