

Testing the educational program “Primary and secondary prevention of cardiovascular diseases” on the basis of social networking service Instagram

Demkina A. E.^{1,2}, Ryabinina M. N.³, Aksenova G. A.⁴, Benimetskaya K. S.⁵, Vasilyeva I. A.⁶, Isaeva A. V.⁷, Lobzhanidze F. A.⁸, Novikova D. S.⁹, Pivenshtein A. L.¹⁰, Savonina O. A.¹¹

Aim. To study the possibility of conducting an educational program “Primary and Secondary Prevention of Cardiovascular Diseases (CVD)”, aimed at increasing health literacy among followers of cardiology blogs on Instagram.

Material and methods. The methodology for conducting an educational program on Instagram included following items: the choice of agents of influence and the forms of engagement with audience; development of evaluation metric; carrying out the program; evaluation of the results obtained; defining a scaling strategy. The educational program was conducted daily from March 19 to March 30, 2020 on Instagram in following medical accounts: @doc_4_you, @zdorovyie_serdtse, @doctor_isaeva_cardio, @dr_cardioann, @doctor_savonina, @cardiolog.novikova, @doctor_lobzhanidze, @dnevnik.doctora, @doc.for.health, @aksenova_doctor. The format is publications of up to 4 thousand characters dedicated to informing people about primary (proper nutrition, quitting smoking, physical activity, obesity, vegetarianism) and secondary prevention (drug treatment) of CVD. The assessment of the results was carried out using descriptive statistics.

Results. The total number of followers of cardiology blogs is 367,727. The audience of professional doctors' accounts is mostly female (from 89 to 95%), the 25 to 34 age group accounts for 40 to 47% of followers. The total number of followers who read 10 publications of the educational program was 104 794; the total audience involvement (comments, reposts, likes, saves) was 9,692 people. The greatest involvement of people was revealed in the following topics — consumption of vegetables, salt and sugar, physical activity, obesity (1146, 1100, 2195, 1052, 1534 people, respectively).

Conclusion. The social networking service Instagram can be used to conduct educational programs aimed at improving the health literacy of Russian people. It is necessary to further improve the methodology for conducting research in

social networks, in order to select the most effective technologies in this topic.

Key words: cardiovascular disease, prevention, social media, Instagram.

Relationships and Activities: none.

¹Research and Practical Clinical Center for Diagnostics and Telemedicine Technologies, Moscow; ²National Medical Research Center of Cardiology, Moscow; ³Sanatorium “Yuzhnoe Vozmorye”, Sochi; ⁴European Medical Center, Moscow; ⁵Federal Research Center Institute of Cytology and Genetics, Siberian Branch of Russian Academy of Sciences, Novosibirsk; ⁶S. M. Kirov Military Medical Academy, St. Petersburg; ⁷Central City Hospital № 20, Yekaterinburg; ⁸Stavropol Regional Clinical Hospital, Stavropol; ⁹A. S. Loginov Moscow Clinical Scientific Center, Moscow; ¹⁰OOO Novaya bol'nica, Yekaterinburg; ¹¹OOO TRI POKOLENIYA clinic, Moscow, Russia.

Demkina A. E.* ORCID: 0000-0001-8004-9725, Ryabinina M. N. ORCID: 0000-0002-2905-7989, Aksenova G. A. ORCID: 0000-0003-0449-1655, Benimetskaya K. S. ORCID: 0000-0002-0043-1113, Vasil'eva I. A. ORCID: 0000-0002-5698-9423, Isaeva A. V. ORCID: 0000-0003-0634-9759, Lobzhanidze F. A. ORCID: 0000-0002-4927-4390, Novikova D. S. ORCID: 0000-0003-0840-1649, Pivenstein A. L. ORCID: 0000-0002-8102-6792, Savonina O. A. ORCID: 0000-0002-9713-3760.

*Corresponding author: ademkina@bk.ru

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Social networks have become not only a part of everyday life [1, 2], but also have a huge impact on such areas as politics, international relations, marketing [3, 4]. Undoubtedly, social media also affects the health care system. In a number of countries with a high standard of living, almost 50% of residents use social networks to search for information about health, including about cardiovascular diseases (CVD) [5, 6]. When searching a “Social media and medicine” in the Pubmed, more than 8,000 publications were received from 2007 to 2020. During this time, the attitude of the medical community towards the role of medical publications on social networks has changed significantly. So, in the period 2007–2010, the first works were published with negative arguments about social networks and a huge number of risks for doctors [7]. Over time, this trend changed in the opposite direction and more and more specialists began to study the possibilities of social networks in improving both public health and the individuals [5, 8, 9]. In 2015, first data was published on the need to implement social networks for physicians and patients [10, 11]. In 2016–2019, leading American organizations in cardiology recognize social networks as a promising platform for education and interaction of healthcare professionals with each other and patients [12], which can contribute to improving cardiovascular health [13]. At present, the social media provides the results of significant studies even before their official publication for a wide range of followers, including non-physicians [14].

With growing activity of medical specialists in social networks, Instagram is becoming one of the most popular platforms for professional medical accounts [15–18]. Nowadays, professional medical blogs are so developed that a number of medical communities took things a step further and created guidelines for social blogging in the specialization area [19].

CVDs occupy a leading place in the mortality pattern in most countries of the world, including in the Russian Federation [20]. Many European countries have achieved a significant reduction in mortality due to CVD, and at the moment, a number of experts agree that it is necessary to look for new ways to improve the cardiovascular health of people and demographic situation. However, there are currently no significant medical and surgical reserves for the treatment of CVD, and, according to the authors, the search for new ways to reduce mortality due to CVD should be directed towards increasing the health literacy of the population. At the same time, the place of social networks in the structure of educational health programs, including preventive ones, has not been finally determined at the moment.

These facts served as a rationale for carrying out this study.

The aim was to study the possibility of conducting an educational program “Primary and Secondary Prevention of Cardiovascular Diseases (CVD)”, aimed at increasing health literacy among followers of cardiology blogs on Instagram.

Material and methods

In the presented study, the methodology of educational program included:

- selection of agents of influence;
- selection of interaction format;
- selection of the most relevant topics and timing;
- determination of the frequency and characteristics of interaction with audience;
- selection of research evaluation metrics;
- carrying out the program;
- evaluation of the results obtained;
- determination of the scaling up strategy.

The research was carried out on the basis of the social network Instagram. The platforms of the educational program were the most popular professional accounts of cardiologists — @doc_4_you, @zdorovye_serdtza, @doctor_isaeva_cardio, @dr_cardioann, @doctor_savonina, @cardiolog.novikova, @doctor_lobzhanidze, @dnevnik.doctora, @doc.for.health, @aksenova_doctor (Table 1).

The educational program was held daily from March 19 to March 30, 2020 on Instagram in professional medical accounts. The format of the program is a publication (article) of up to 4 thousand characters dedicated to informing people about primary (proper nutrition, smoking cessation, physical activity, obesity, vegetarianism) and secondary prevention (drug therapy) of CVD (Table 2).

The educational program took place in 3 stages. At the first stage, the project was started with announcement in all cardiology blogs in order to maximize the audience attention. The second stage included 10 publications that increase the health literacy of followers of cardiology blogs (Table 2). At the third stage, a final article was published, summarizing all the information on primary and secondary prevention of CVD.

Statistical processing. This study did not test any predefined statistical hypotheses. The main aim was to collect data on the potential of social networks in the spread of health information on primary and secondary prevention of CVD.

There were following statistical indicators assessed in this article:

1. Outreach — a metric reflecting the number of users who have read the publication.

Table 1
Instagram accounts of cardiologists participating in the educational program and the number of subscribers as of 25.03.2020

Blog	Number of subscribers
@doc_4_you	177,000
@zdorovye_serdtza	30,100
@doctor_isaeva_cardio	25,900
@dr_cardioann	7,813
@doctor_savonina	41,300
@cardiolog.novikova	5,125
@doctor_lobzhanidze	28,300
@dnevnik.doctora	29,200
@doc.for.health	13,900
@aksenova_doctor	9,089

Table 2
Topics of program publications

Blog	Topic
@doc_4_you	Proper nutrition. Refusal of sweets
@doctor_lobzhanidze	Proper nutrition. Salt
@zdorovye_serdtza	Proper nutrition. Fish
@doctor_isaeva_cardio	Proper nutrition. Vegetables
@dr_cardioann	Healthy sleep hygiene
@doctor_savonina	Smoking prevention
@cardiolog.novikova	Physical activity
@dnevnik.doctora	Obesity prevention
@doc.for.health	Vegetarianism and CVD risks
@aksenova_doctor	Secondary prevention of CVD

2. Engagement — a metric reflecting overall involvement. This metric summarizes likes, comments, shares, and saves into one single value.

3. Comments — a metric reflecting the number of unique comments from users.

The above statistical metrics are estimated by the social network's own software, which is available for analysis (Figure 1). The indicators were recorded 48 hours after the publication of the information material.

Results

The total number of potential readers of the educational program was 367,727, excluding the audience intersection.



Figure 1. Statistics of automatic indicators in the Instagram.

The audience of health accounts is mostly female (from 89 to 95%); the age group of 25–34 years accounts for 40 to 46% of followers (Table 3). Up to 20% of subscribers of cardiology blogs live in Moscow, up to 5% — in St. Petersburg; other constituent entities of the Russian Federation accounts for approximately 2%, depending on the place of residence of the authors.

At the first stage of the educational program, the total outreach was 55,592; the unique audience engagement was 4,325 followers. The total number of people who read the information materials on primary and secondary prevention of CVD at the second stage was 104,794; the unique engagement was 9,692 people. The total outreach of the third stage was 52,241; the maximum engagement was 4,985 people (Table 4).

The total number of people who got acquainted with the educational program was 212,627, with a maximum engagement of 19,002 followers.

The most popular topics among followers of cardiology blogs were the consumption of vegetables, salt and sugar, physical activity, obesity (Table 5).

Table 3

Demographic characteristics of cardiology blogs' followers as of 25.03.2020

Blog	Age range, % (years)						
	13-17	18-24	25-34	35-44	45-54	55-64	65+
@doc_4_you	3	24	46	18	6	2	1
@zdorovye_serdtse	4	32	42	13	5	3	1
@doctor_isaeva_cardio	5	25	42	18	6	3	1
@dr_cardioann	1	15	40	23	13	6	2
@doctor_savonina	4	22	44	19	7	3	1
@cardiolog.novikova	4	24	46	18	5	2	1
@doctor_lobzhanidze	2	20	41	22	9	4	2
@dnevnik.doctora	1	14	38	28	12	5	2
@doc.for.health	1	12	46	26	10	4	1
@aksenova_doctor	1	18	45	24	8	2	2

Table 4

The total number of contacts with the audience at I, II, III stages of the educational program as of 25.03.2020

Blog	Stage I			Stage II			Stage III		
	Outreach	Com.	Eng.	Outreach	Com.	Eng.	Outreach	Com.	Eng.
@doc_4_you	17917	66	505	28168	173	2195	13259	53	677
@zdorovye_serdtse	2062	0	128	3386	15	613	2000	5	500
@doctor_isaeva_cardio	2598	11	270	6561	56	1146	2855	7	317
@dr_cardioann	2888	19	347	4075	75	899	3058	28	458
@doctor_savonina	3140	18	427	27960	48	527	1701	15	250
@cardiolog.novikova	2450	18	286	4097	66	1052	3900	40	823
@doctor_lobzhanidze	6675	15	705	8269	63	1100	13164	25	1301
@dnevnik.doctora	13994	121	1597	13781	98	1534	12268	50	300
@doc.for.health	2734	14	310	6856	31	452	1005	15	250
@aksenova_doctor	1134	5	200	1641	12	174	1601	2	109
Total	55592	287	4325	104794	637	9692	52241	240	4985

Note: Outreach — a metric reflecting the number of users who have read the publication; engagement — a metric reflecting overall involvement; comments — a metric reflecting the number of unique comments from users.

Thus, the division of the educational program into stages made it possible to increase the overall outreach and audience engagement. However, attention is drawn to the decrease in activity towards the third stage, which requires additional analysis. The total number of participants in this educational program was 212,627; the total engagement was 19,002 people, excluding the audience intersection. The most popular topics were proper nutrition, physical activity, obesity.

Discussion

The social network Instagram can potentially be used to educate the population and to create the educational programs in order to increase health literacy in cardiology.

In 2017, Thaler R was awarded the Nobel Prize for research in the field of behavioural economics and, as a result, identifying the possibilities and directions of the state's influence on the individual behaviour of people. Changing health behaviour of people plays

Table 5

Distribution of the audience engagement of the educational program

Blog	Topic	Maximum audience engagement
@doc_4_you	Proper nutrition. Refusal of sweets	2195
@dnevnik.doctora	Obesity prevention	1534
@doctor_isaeva_cardio	Proper nutrition. Vegetables	1146
@doctor_lobzhanidze	Proper nutrition. Salt	1100
@cardiolog.novikova	Physical activity	1052
@dr_cardioann	Healthy sleep hygiene	899
@zdorovye_serdtza	Proper nutrition. Fish	613
@doctor_savonina	Smoking prevention	527
@doc.for.health	Vegetarianism and CVD risks	452
@aksenova_doctor	Secondary prevention of CVD	174

Abbreviation: CVD — cardiovascular disease.

a key role in shaping a nationwide health strategy. At the core of health management, the World Health Organization proposes to use the concept of health promotion, which is based on a combination of social, economic, political programs aimed at changing the adaptation of a person and his environment in order to improve his health. To regulate the concept of health promotion, you can use tools of internal and external motivation, for example, educational programs that stimulate people to make healthy choices [21]. According to the authors, social networks can take a certain place in the spread of health information among the population around the world without significant financial and time expenditures. However, such educational health programs must be created taking into account the choice of a social network (Instagram, VKontakte, Facebook, etc.). Key points worth paying attention are opportunities, methods and formats for spreading information, characteristics of the target audience, territorial epidemiological situation.

The total outreach of the educational program “Primary and secondary prevention of CVD” within 10 days was 212,627 people. For comparison, the total population of Iceland as of January 1, 2018 was 348,450 people, and Montenegro — 622,359 [22]. Thus, it should be noted that the use of the Internet and social networks can make it possible to almost completely disseminate the necessary information not only in a single family, but also on the territory of certain subjects, as well as throughout the state.

Quite often, a limitation in the use of social networks for educational programs is the prejudiced attitude of the professional community towards the prevailing target audience. Most of the audience of

social networks is female, and the dominant age is from 18 to 34 years [23]. This trend was also identified in the presented study. However, the educational program “Primary and secondary prevention of CVD” was designed taking into account the possible impact of women on the well-being and health in the family, which has been proven in studies [24–26]. Thus, it is women who can influence such significant behavioural patterns as annual medical examination, adherence to treatment, prevention of risk factors [24, 25].

When creating educational health programs in social networks, it is also necessary to take into account the epidemiological situation in the territory.

Thus, according to the ESSE-RF study, the prevalence of smoking in Russia on average was 27,7%. It was also revealed that 38,8% of the population have low physical activity, while the highest prevalence of low physical activity was found in young and middle age, from 25 to 44 years. The prevalence of obesity was 33,4%. According to the ESSE-RF study, in Russia there is an insufficient consumption of vegetables/fruits (41,9%) and fish/seafood (36,9%), while 49,9% of the population suffers from excessive salt consumption [26]. To date, there are also low medical adherence among cardiac patients in Russia [20].

In this regard, the presented program was created taking into account the epidemiological characteristics in Russia. Moreover, the data obtained revealed the most popular topics (consumption of vegetables, salt, sugar, physical activity, and obesity), which may indirectly reflect the current epidemiological situation in the country.

The following new sections of the health promotion using social networks, which require further analysis, were revealed: impact of social media on medical adherence, lifestyle modification, confidence in the healthcare system, most effective format of interaction with the audience of health blogs (publications or videos), and studying the effectiveness of various formats and demographic indicators.

Conclusion

At present, social networks may occupy some position in the healthcare system, but their exact role is not defined. The results demonstrated the potential of the Instagram in improving health literacy through educational programs, including in the field of primary and secondary prevention of CVD. According to the authors, it is the dissemination of educational

health programs for patients that will be the leading role of social networks in the future. Currently, social networks have their own sex and age characteristics of the audience, which must be taken into account when creating the prevention programs. It is especially important to develop health educational programs taking into account the territorial prevalence of CVD risk factors.

The development of educational programs for patients under the auspices of professional communities and their dissemination using social networks is possible in the near future. However, this requires a more detailed study and the creation of special regulatory bodies that will control popularization of reliable information.

Relationships and Activities: none.

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