Health Science Students’ Use of Social Media for Educational Purposes: A Sample from a Medical University in Hanoi, Vietnam

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ABSTRACT

BACKGROUND: Using social media (SM) for educational purposes might improve academic performance.

AIM: This paper aims to describe health science students’ use of SM for educational purposes and its association with their academic performance.

METHODS: Two hundred ninety-seven undergraduate health science students completed a self-administered questionnaire comprising 4 sections related to social media.

RESULTS: Almost all students (99.7%) reported using SM for learning, most (90.9%) of them daily. The most preferred type of SM learning was Facebook. Most students thought that using SM for learning is convenient and useful. They suggested there should be 1 Facebook account for each subject, that every classmate could access to obtain knowledge from lecturers and to interact between students and lecturers. The logistic regression model showed that the more time students practiced following the advice on posted information, the more likely they were to achieve a GPA at distinction level or above (OR = 4.2; OR = 5.4, and OR = 9.4, respectively with times of practicing). Conversely, the students who used SM for learning less than once a month were less likely to obtain a GPA at distinction level (OR = 0.5).

CONCLUSIONS: Almost all health science students used SM to support learning and use of SM for learning was associated with higher academic performance.

KEYWORDS: Social media, health science students, educational purpose, perception, Vietnam

Introduction

Social media (SM) are very popular for most individuals in many countries who can access the Internet. Various definitions are given for SM; in this study, we consider that SM is “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content.” It can be used in the form of Facebook, Wikipedia, and YouTube, among many others. SM allows the users to access and exchange information in many ways, such as present themselves, share ideas, give comments, and like, create or modify the contents online. There are differences between the types of SM: Facebook can be used for communication while YouTube is mainly used for viewing video clips and Wikipedia is mainly about collaborative content creation. As the convenience of SM has increased, the number of users has evolved rapidly. For example, in 2012, 1 billion people were actively using Facebook, while in 2020 that has risen to 2.6 billion, making Facebook the biggest social network worldwide. After Facebook, YouTube and WhatsApp have become the second most popular with 2 billion users, following by Facebook Messenger with 1.3 billion users.4

Higher education has integrated, implemented, and experienced SM as a tool to build on the interactivity of e-learning, with additional features that are more learner-generated, collaborative, and engaging. Overall, almost all (98%) students have an SM account, which they can use wherever they wish. Students of medicine are also part of the “Net Generation.” An increasing number of people with different functions in the medical community use smartphones for teaching and learning on a daily basis. SM have advantages over classical approaches to learning because they are convenient to use and relatively affordable, compared to other technologies. Additional strong points are the creation of learning networks outside the classroom and being able to offer a broad range of extra learning opportunities. Research has shown that health science students have a positive perception of social networking websites and their role in medical professionalism.
questions about the relationship between SM use and academic performance. Although SM have great potential in the educational setting, there is debate about the potential disadvantages. Many students now depend greatly on SM to enhance their learning experience, as they believe that their positive effects on education outweigh the negative.

Vietnam belongs to the group of low- and middle-income countries (LMIC) but the percentage of people using the Internet has been increasing steadily since 1997 when the Internet was adopted in the country. In 2018, there were about 54.7 million Internet users, or 57% of the Vietnamese population; it was forecasted to reach 75.7 million in 2023. On average, Vietnamese people spend about 7 hours per day on the Internet. Facebook and YouTube are the most popular networks; as of January 2020, Facebook.com was the most-visited website in Vietnam in terms of time spent per visit. On average, users spent 12 minutes and 9 seconds and clicked on 7.8 pages per visit. A few studies have suggested that Vietnamese students could benefit from using Facebook for educational purposes, such as exchanging information with their peers and discussing academic topics. These uses occurred “often or very often” among 80.7% of students at an University in Hochiminh city, while students at a language university in Vietnam improved their competency in English by using Facebook.

In Vietnam, the medical student program differs from many others because besides the accumulation of knowledge, it includes learning numerous clinical skills. Undergraduate medical education curriculum in Vietnam follows a national framework; all medical universities refer to a book laying out the knowledge, attitudes, and skills for medical doctors as the basis for a standard curriculum. However, the content and teaching and learning methods vary by universities. Evidence-based learning and problem-based learning have been applied by a few universities. Training lasts 4 years for the health science majors including nursing, public health, and nutrition, and 6 years for medical doctors including general and preventive medical doctors and dentists. General scientific education is provided in the first 2 years, followed by 2 to 4 years of basic and professional medicine according to the major. In the second stage, students do clinical rotations in the morning, attend lectures in the afternoon, and spend on average 1 night per week on night shift at the hospital. Assessment can include essays, practical exercises, multiple-choice exams, clinical case testing or objective structured clinical examination. The number of health science students has been increasing, and the development of infrastructure and human resources for medical teaching cannot meet the demands of the large classrooms and the hospitals, which have classically been the main locations for learning. Regulations no longer allow inexperienced students to examine patients, so most clinical skills are taught in skills laboratories, and through observation from a distance in the hospitals. Presently, central hospitals have patient overloads, reducing the learning space for students. Additionally, since 2020, many hospitals have to earn their funding, and without subsidization they do not want to spend much time on supervising students.

Hanoi Medical University (HMU) is the oldest and one of the 2 biggest medical universities in Vietnam. Although it is very difficult to enter HMU (high school graduates must have passed the National Entrance Examination with at least 90% of total marks to be admitted to medicine, and at least 75% for other health science majors), many excellent students want to study at HMU. Faced with a shortage of doctors in Vietnam, the Ministry of Training and Education approved for HMU to increase the number of students to study medicine. Up to 2021, HMU was subsidized by the government and students only had to pay a small part of their tuition fees. Although HMU was one of the first to apply active teaching and learning methods, there are limitations in the teaching resources compared to the numbers of undergraduate health science students. The students still suffer from learning in large classrooms. Students say that it is difficult to access lecturers outside of classroom sessions, resulting in few interactions between students and teachers. HMU has been exploring approaches to address this problem, including the use of Internet-based resources to augment classroom and clinic teaching.

SM has great potential in the educational setting to provide students with opportunities to share and express knowledge and information with each other. Medical teaching institutions in Vietnam might consider using SM for educational purposes, by creating a forum for study, or applying the technology to instruct students on clinical skills using demonstrations on videos and simulation exercises. However, before an intervention program is designed, we need to understand how health science students currently use SM for learning, and their attitude toward its potential application as a teaching tool. This study therefore aimed to describe the pattern of SM use among health science students for educational purposes and their perception of its usefulness for that purpose. We also looked for any factors associating SM use with grade point average (GPA).

This article reports on the findings of a survey on that topic at a Vietnamese medical university. As we were preparing this report for publication, the Covid19 pandemic struck, so we added information about the changes in these practices caused by the pandemic.

Methodology

Setting

A cross-sectional study was conducted in 2016 at Hanoi Medical University in Hanoi, Vietnam.

Study subjects, sample size, and sampling

This study used the World Health Organization sample size calculation formula to calculate the sample size, assuming a 25.5% prevalence of using SM to find information for
educational purposes, found in the literature (with a precision of ±0.2 and a 95% confidence level) resulting in a desired sample size of 280 students. This number was increased by 7% to account for losses or refusal to participate study, so the final sample size we aimed to recruit was 300 students. The list of students from the 2nd, 4th, and 6th academic years in different health science majors, including nursing, public health, preventive medicine, general medicine, and dentistry, was provided by the Department of Training and Education at the university, and 100 students per academic year were randomly selected using Excel. All the selected students were invited to participate in the study and 297 of them agreed.

**Data collection tool**

A self-administered questionnaire with 25 questions was developed by the principal investigators after reviewing the literature and discussing with students to determine components in the last section. The anonymous and confidential questionnaire comprised 4 sections: the first included questions on demographics (age, gender, type of living situation, and academic year), and grade point average (GPA) in the previous semester, without any personal identifying information. The second part was about patterns of SM use. For example: "How many minutes per day do you spend on SM in general and on SM for study purposes in particular?" and asking them to rank their preferred types of SM. The third part included questions on their use of SM for learning and the activities aimed at learning. Most of the questions were closed, with pre-formulated answer choices, but included a category "other" for respondents to fill in if needed. The 4th part included 7 questions to rate attitudinal statements of their opinions about the feasibility of using SM for educational purposes. These statements had been discussed with 20 students in different majors including general medicine, preventive medicine and public health from the 1st, 4th, and 6th years, to identify how best to use SM for learning. In the discussion, the students considered convenient ways to apply SM for learning. The results of that discussion were formulated into 6 closed questions in the questionnaire, using a 5-point Likert scale ranging from strongly agree to strongly disagree for the responses.

**Study variables**

**Dependent variables.** The dependent variable was GPA (GPA < 7/10 and GPA at least 7/10).

**Independent variables.** Independent variables including sharing/introducing educational information, practicing according to advice posted, and using SM for providing health education.

**Data collection**

First, the questionnaire was pre-tested among 10 students from different majors including general medicine, nursing and public health, to ensure that the questions were clearly formulated. Second, the 300 selected students were informed by their class monitors of the study aims, assured of confidentiality, and provided a specified date, time, and place to fill in the questionnaire. Those who agreed to participate in the study came to that location to complete the questionnaire under the guidance of the principle investigators. A maximum of 20 students was invited to come at each time point. Students delivered the completed questionnaire to the principal investigators when finished; the average time taken to complete it was 15 minutes. Finally, 297 completed questionnaires were returned to the investigators (data shown in Tables 1-6). Since the questionnaires were anonymous, and the large number of students means that teachers will not know individual students, the researchers could not identify who responded to the survey.

A second questionnaire administered after the start of the Covid19 pandemic in 2020 was shorter. The purpose of the quick survey was to investigate whether the students’ use of SM for learning was influenced by the changed situation during the Covid 19 pandemic. The questionnaire was posted in Google form and the link was sent to the class monitors of the second, the third and the 4th-year classes in different health science majors. The class monitors sent the link to all students in the class to ask them to volunteer to fill in the form. After 1 week, the form had been completed by 265 students, of whom 32.3% were male; 56% were studying medicine while the others were majoring in nutrition, public health, preventive medicine, nursing, or traditional medicine; 62.8% of the students were in the third academic year, 34.6% in the second year and the remainder in 4th year. The data from this survey is only included in Table 7 below.

**Data analysis**

Analyses were performed with SPSS for Windows (version 20) and STATA (version 14). Descriptive statistics were used to estimate the frequency and prevalence of using SM for learning purposes. Median and interquartile range were used for reporting the perception of students about the ability to apply SM for learning. Logistics regression analyses were conducted to investigate relationships between the independent and dependent variables. The findings are presented in the table with the odds ratio (OR) and 95% CI.

**Results**

**General information on participations**

There were 297 respondents, of which 44.8% were male which is similar to the proportion of males in the student population. Their average age was 22.2 (SD = 0.1), and 75.1% of students had obtained the level of "distinction" or better (average mark 7/10 or above) in the previous semester, while 24.9% of students had obtained the lower distinction level (average less than 7/10).
**Pattern of SM use for educational purpose**

All students used the Internet, and all but one used social media (SM); 90.9% used it daily. Among students using SM, 100% used it for learning purposes; students participated in an average of 5.2 groups for learning (Mean; SD = 5.2; 4.5).

Table 1 below shows the average time per day students were spending on SM use in general and for learning in particular. Most students (90.6%) used SM for learning for 1 hour or less per day. The average time they spent was 97 minutes on SM, of which 42 minutes (SD = 37) was for learning.

**Preferred SM used for educational purpose by health science students**

Most of the students discovered SM for learning through an introduction by friends (79.5%), followed by self-searching (15.8%), relatives (1.7%); teachers (1.3%), and mass media (1.3%).

Table 2 shows that the students’ first choice of SM for learning was Facebook, followed by YouTube; Wikipedia, Instagram, and Zing Me (Vietnamese platform) were much less frequently used.

**Purposes and perception of students about using SM for educational purpose**

The majority of the students were using SM for learning specifically for “sharing learning experience (71.3%)” and “supplementing knowledge after lectures (67.2%).” A smaller proportion (30.7% to 41.9%) used them to search for information related to disease prevention, treatment or consultation (Figure 1).

The most frequently used activities for educational purposes were to “read and watch shared/posted materials such as video and text” and to “find study materials.” Other activities occupied less time on SM (Table 3).

Around 3 quarters of the students found using SM for learning to be very convenient or convenient and a similar proportion found SM to be very useful or useful. They were quite willing to use SM for learning (Table 4). Those who did not rate it as useful or convenient often answered “neutral.”

Most students agreed or strongly agreed with the idea that each class “should have 1 Facebook account or class account that every classmate can access”; that “lecturers should introduce Facebook account, share the link or introduce web page for students to have further study” and that “each subject should have one forum to interact between students and lecturers for study.” The other ideas also were agreed by students but with slightly less agreement than the 3 above ideas (Table 5).

**The relationship between health science students’ grade point average and some activities of social media for educational purposes**

No statistically significant association was found between the students’ GPA and the frequency of sharing educational related information with others, but there was a significant association between the students’ GPA and the frequency of practicing what was advised on the SM post (such as doing exercises or assignments as recommended in the post, preparing for quizzes and exams, watching videos and doing role plays, discuss clinical cases...). Students who practiced that advice were more likely to obtain a grade at distinction level (at least 7/10 points) than were those who never practiced it. The more often students practiced, the more likely they were to achieve a GPA at distinction level or above. Students who used SM to provide health information they sourced from SM in their own posts (eg, uploading health education links on their SM) were less likely to obtain distinction level compared to those who never did so (Table 6).

The above dated had been collected during normal study conditions at the university. However, as we prepared this paper for publication, the Covid19 pandemic appeared. Because the measures to combat the spread of the virus limited contact on the campus, we investigated whether the SM use of the students had changed in the new context (see the Table 7).

From these results, it is clear that most of the students increased the time they spent on SM for learning, but the types of SM used remained similar, except that Google Plus was added.
This study addressed 3 important issues related to the use of SM for educational purposes by health science students at Hanoi Medical University. The first issue was about the pattern of SM use for educational purposes, the second was the students' attitudes toward using SM for educational purposes, and the third was the association between SM use and the GPA achieved in the previous semester. We found that almost all students used SM, most of them daily, and all of them used SM for educational purposes. The average time that health science students spent on SM for learning was 42 minutes per day. Their favorite SM for this purpose was Facebook, followed by YouTube, and then Wikipedia. Facebook is also the most popular SM among the Vietnamese population.4 In Pakistan16 and Malaysia,17 Facebook has remained the most commonly used SM among students. However, among medical students in the United Arab Emirates, YouTube was the most preferred tool (52.7%) and Facebook came second (45.2%),11 while in nearby Saudi Arabia students also used YouTube the most (83.5%), while WhatsApp (35.5%), and Twitter (35.3%) followed well behind.10 A systematic review among graduate medical education showed that Facebook, blogs, Twitter and podcasts were the 4 most common platforms.18 It seems that in general, Facebook and YouTube are the most commonly used tools among college students19 and Vietnamese health science students are no exception. In our second small survey collected

| TABLE 2. Preferred SM used for educational purposes by medical students. |
|-----------------|------|------|
| VARIABLES       | MEDIAN | IQR  |
| Facebook        | 1     | [1; 1] |
| Youtube         | 2     | [2; 2] |
| Wikipedia       | 3     | [2; 3] |
| Instagram       | 3     | [2; 4] |
| Zingme          | 3     | [3; 4] |

1 = most preferred and 4 = least preferred.

| TABLE 3. Activities of 297 students in using SM for educational purposes. |
|-----------------|------|------|
| TYPE OF ACTIVITIES | N    | %    |
| Read or watch the shared/posted materials such as video, text | 242  | 81.5 |
| Finding study materials | 236  | 79.5 |
| Comment.Raise questions/answer questions | 141  | 47.5 |
| Post video/link to share students’ experience | 70   | 23.6 |
| Communicate for health education | 66   | 22.2 |

| TABLE 4. Perceptions of students about using SM for educational purposes. |
|-----------------|------|------|
| OPINIONS        | N    | %    |
| Convenience of using SM for learning |
| Very convenient | 79   | 26.6 |
| Convenient      | 159  | 53.5 |
| Neutral         | 58   | 19.5 |
| Not convenient  | 1    | 0.3  |
| Usefulness of SM for learning |
| Very useful     | 57   | 19.2 |
| Useful          | 167  | 56.2 |
| Neutral         | 71   | 23.9 |
| Not useful      | 2    | 0.7  |
| Willingness to use SM for learning |
| Strongly willing| 78   | 26.3 |
| Willing         | 148  | 49.8 |
| Neutral         | 63   | 21.2 |
| Not willing     | 7    | 2.4  |
| Not strongly willing | 1   | 0.3 |

**Discussion**

This study addressed 3 important issues related to the use of SM for educational purposes by health science students at Hanoi Medical University. The first issue was about the pattern of SM use for educational purposes, the second was the students' attitudes toward using SM for educational purposes, and the third was the association between SM use and the GPA achieved in the previous semester. We found that almost all students used SM, most of them daily, and all of them used SM for educational purposes. The average time that health science students spent on SM for learning was 42 minutes per day. Their favorite SM for this purpose was Facebook, followed by YouTube, and then Wikipedia. Facebook is also the most popular SM among the Vietnamese population.4 In Pakistan16 and Malaysia,17 Facebook has remained the most commonly used SM among students. However, among medical students in the United Arab Emirates, YouTube was the most preferred tool (52.7%) and Facebook came second (45.2%),11 while in nearby Saudi Arabia students also used YouTube the most (83.5%), while WhatsApp (35.5%), and Twitter (35.3%) followed well behind.10 A systematic review among graduate medical education showed that Facebook, blogs, Twitter and podcasts were the 4 most common platforms.18 It seems that in general, Facebook and YouTube are the most commonly used tools among college students19 and Vietnamese health science students are no exception. In our second small survey collected
during the Covid 19, our students also ranked the order of social media sites for their learning as: Google plus, Instagram, LinkedIn and Twitter after Facebook, You Tube, and Wikipedia. This result is in line with Vietnamese customs, since LinkedIn, Google plus, Instagram, and Twitter are less commonly used among the population. A survey among students in the United States also showed that LinkedIn was the least used by students. Although LinkedIn is the oldest social network, it is targeted at professionals interested in networking with other established professionals, and is less used by younger generations.

The specific educational purposes of using SM in our study were to share learning experience (71.3%), to supplement knowledge after lectures and practicals (67.2%), and to search for information related to disease prevention, treatment or consultation (30.7%-41.9%). The findings in this study are similar to other studies. For example, health science students at Sharjah University, United Arab Emirates use SM for accessing information, and aiding social interactions with colleagues; Croatian students use SM to distribute information and gather data, getting information about teaching, and exchanging information Skendžić and Devčić and students in Canada used SM

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**Table 5.** Perception of students about applying social media for teaching and learning.

| STATEMENTS ABOUT APPLICATION | MEDIAN | IQR   |
|------------------------------|--------|-------|
| Lecturers should contact students through Facebook | 4      | 3; 4  |
| Each class should have one Facebook account or class account so every classmate can access | 4      | 4; 5  |
| Lecturers should introduce Facebook account, share link or introduce web page for students to have further study | 4      | 4; 5  |
| Each subject should have one forum to interact between students and lecturers for study | 4      | 4; 5  |
| Students could raise questions and discussion related to study content through SM forum | 4      | 3; 4  |
| Students should be provided topics for discussion through SM forum by lecturers | 4      | 3; 4  |

IQR = (min; max): Likert scale from 1 (strongly disagree) to 5 (strongly agree).

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**Table 6.** Logistic regression model for grade point average and SM activities for educational purposes among 297 students.

| MODEL | GPA BELOW 7.0/10 | GPA ABOVE 7.0/10 | OR  | 95%CI      | P VALUE |
|-------|------------------|------------------|-----|-----------|---------|
|       | N                | N                |     |           |         |
| Sharing/introducing education information with others |       |       |     |           |         |
| Never | 7                | 15               | 1   |           | >.05    |
| Less than once a month | 28      | 86               | 0.9 | 0.3-2.6   | >.05    |
| 2-4 times per month | 23      | 77               | 0.9 | 0.3-3.2   | >.05    |
| At least twice per week | 16      | 45               | 0.9 | 0.2-3.1   | >.05    |
| Practicing according to posted advice |       |       |     |           |         |
| Never | 11               | 9                | 1   |           |         |
| Less than once a month | 26      | 78               | 4.2 | 1.4-12.0  | <.01    |
| 2-4 times per month | 29      | 96               | 5.4 | 1.7-16.4  | <.01    |
| At least twice per week | 8       | 40               | 9.4 | 2.5-34.5  | <.01    |
| Using SM to provide health education |       |       |     |           |         |
| Never | 28               | 109              | 1   |           |         |
| Less than once a month | 29      | 70               | 0.5 | 0.3-0.9   | <.05    |
| 2-4 times per month | 11      | 30               | 0.5 | 0.2-1.3   | >.05    |
| 2-3 times per week | 6       | 14               | 0.4 | 0.1-1.2   | >.05    |

Note: The bold numbers were statistically significance.
to share learning experiences in human anatomy education and to disseminate knowledge in dental education. It seems that the use of SM by the Vietnamese health science students is similar to that of other students around the world.

Most of the students in our study agreed that each class should create a Facebook account through which lecturers could introduce a link or share information related to the study subjects so that all students could access them. Each subject should have 1 forum for interactions between students and lecturers. They thought that SM would be helpful to improve personal skills and professional communication through the continuous posting of pictures, videos, audios, chatting, writing blogs, creating and editing individual profiles by teachers.

Social interactions between students and teacher would be a very positive use of SM, which could provide enough opportunities to promote students based on their learning activities, integration of new information and learning experiences which could greatly improve academic outcomes. In Morocco, Oujda Medical School used Facebook to promote interactions between lecturers and 2nd-year health science students with good feedback. Moroccan students thought that the biggest advantages of Facebook were for interaction with teachers outside the class, and to supplement resources for better understanding of the lessons. Since Moroccan medical education appears to be similar to Vietnam, which still has traditional lectures in large classes as the standard teaching method, their experience is relevant for the Vietnamese.

One of the principles that can lead to more effective learning is to engage the students in active learning. Therefore, medical schools in Vietnam should consider the integration of SM with traditional classroom teaching because of its advantages for collaboration, feedback, and engagement. Facebook can also be used to get students involved in a supportive learning community among their peers. There are potential disadvantages,

| VARIABLES | STUDENTS’ ANSWERS |
|-----------|-------------------|
| The average time students use SM per day for learning during the time of Covid 19 | 126 min |
| The frequency that students use SM for learning | 63%: daily |
| | 26%: weekly |
| | Others: less than weekly |
| The frequency that students use SM for learning during the time of Covid 19 | 58.5%: daily |
| | 31.3%: weekly |
| | Others |
| Compared to the time before the time of Covid19, the change in using SM for learning | 63.3% more |
| | 29.1%: no change |
| Reasons for changes after Covid 19 | - Teachers require to study through SM, zoom. |
| | - Group study organized online. |
| | - All information related to study was posted through closed Facebook group by class monitor. |
| | - Have more time than before. |
| Type of SM used for learning during Covid 19 (ranked from the first choice to the last choice) | 1. Facebook |
| | 2. YouTube |
| | 3. Wikipedia |
| | 4. Google plus |
| | 5. Instagram |
| | 6. LinkedIn |
| | 7. Twitter |
| The most time on SM for learning is on | 1. Facebook (40.4%) |
| | 2. YouTube (34.7%) |
| | 3. Wikipedia - Google plus (9.1%) |
such as leading to Internet addiction and distraction, and risks to maintenance of privacy. A study among young Vietnamese from 15 to 25 years old reported that 21.2% had Internet addictions, which is the highest prevalence reported among Asian countries. This possibility is therefore a consideration in deciding to encourage health science students to use Facebook for learning. There has been discussion and debate about privacy when using Facebook for educational purposes. In fact, Facebook is already used informally for learning enhancement by health science students and privacy can be strengthened by creating closed groups. Other research showed that even using closed Facebook, privacy can still be an issue, since for instance, a photograph posted by one account holder could be copied by a friend and sent on to others who then post it on, so it becomes widely available beyond the control of the member who posted it. Also when people access a Facebook-enhanced application, Facebook can store people’s names, profile photos, current location, networks, friend lists, and pages. Therefore, Facebook is helpful for educational purposes if it is used correctly. It is recommended to develop guidelines for the professional use of Facebook for students.

It is interesting to note that in our study, there was a positive relationship between high GPA and student practicing the recommended guidelines as posted, but a negative relationship with their sharing information for health education. Those students who more frequently practiced the posted advice they got on SM were 4.2 to 9.4 more times likely to have obtained a GPA at distinction level in the last semester, compared to those who never did that. However, our students who used SM for sharing health education were less likely to obtain that high GPA compared to those who never did. This finding suggests that Vietnamese students used SM for learning, which helped them improve their study and develop needed skills, which resulted in higher examination marks. On the other hand, although it seems counterintuitive, students who shared the health information by posting it on their own SM did not have those better results. Possibly that sharing was part of a break from study, and by spending more time on SM they studied and learned less. A study on SM in education explained that it depended heavily on “a complex interaction between several factors including the timing of content delivery, the integration of SM content with course assessment, and the student’s perspective on using SM for academic purposes.” Apparently, the students’ opinions on using SM also influenced their academic results. For example, students who practiced what they read on posts from open or closed Facebook groups to prepare for exams, shared online material, discussed clinical cases, and exchanged information from clerkships did well. Providing useful advice could encourage health science students to engage in reflective practice, and teach them professionalism. However, other activities such as sharing or posting health education information are apparently more for relaxation, and might serve for maintaining relationships with others but resulted in a negative association with academic results. College students with higher GPA were more likely to use Facebook for educational purposes.

Perhaps it is not unexpected that the appearance of Covid19 resulted in increased use of SM and the addition of group media to the students’ activities using SM for learning. The policy of compulsory physical distancing has been implemented in many countries. Studies among health professional students in Croatia, Singapore, and Indonesia showed that during the Covid19 pandemic, teaching and learning methods shifted to exclusive e-learning for at least some weeks or months, through Zoom and Microsoft Teams. In Vietnam the requirement for distance learning is similar to other countries. Students studied all theory lessons via distance learning while clinical and hospital lessons have been suspended during the pandemic of Covid19. The results of our second small survey showed that nearly 90% of students were using SM for daily or weekly learning during that period, and 63.3% of students used SM for learning more than before Covid19 appeared. The activities were studying through Zoom, online group discussion, and sharing information through Facebook. Results from studies showed that students in Singapore are generally satisfied when studying anatomy over Zoom and the result was similar among Croatian medical students. Less than half of Croatian participants felt deprived or concerned due to the lack of practical lessons; they suggested compensating the students for their lack of practical education by recording the lectures and providing more video materials/tutorials.

In general, most of the health science students recognized advantages to online education, such as better use of time; they said they would prefer a combination of classroom and e-learning for the future. The restrictions during the COVID-19 pandemic presented a powerful test of the potential of online learning. It will be interesting later to investigate how many of these changes remain permanent, and which may return to the previously common patterns.

Study limitations: Because the respondents themselves decided whether to participate in the study, there may have been bias toward the more active students. There might have recall bias when the students estimated the time spent on SM and SM for learning. They might check SM often through the day for short periods, making a precise estimate of total time difficult. The total time on SM might also be underestimated, as it was lower than what has been reported for Vietnamese youth in general. However, health science students may simply have less free time for SM. The students who responded in the main survey had quite a high proportion obtaining the level of distinction in the previous year, which might have influenced the results about the positive relationship between high GPA and practicing what was posted in the guidelines.

Conclusion
This is the first study in Vietnam to identify the pattern of SM use for learning and associations between GPA and SM use
among health science students. All most all health sciences stu-
dents at Hanoi Medical University use SM for learning, most
frequently Facebook and YouTube. SM usage was associated 
with higher GPA scores. Our findings should be considered by 
medical universities when they are developing SM for learning 
strategies, which should consider the local conditions, includ-
ing control of epidemics.

Acknowledgements
We are also grateful to Dr. Pamela Wright, of Guelph
International Health Consulting, for English language editing.

Author Contributions
PBD, NDC and VTMP supervised data collection; PBD,
NTHD and KBG performed data analysis; PBD, VTMP,
NDC, NTHD and KBG wrote the manuscript. All authors
approved the manuscript.

Ethics
This study was approved by the Scientific and Ethical
Committee for Biomedical Research, Hanoi School of Public
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