STUDENTS' PREFERENCE IN TEACHING-LEARNING USING NEW TECHNOLOGIES: A CONJOINT ANALYSIS

ABSTRACT

Aims: To determine the Development Communicationstudents' preference in teaching-learning during the new normal.
Study design: Quantitative-descriptive approach.
Place and Duration of Study: Davao del Sur State College (DSSC), Matti, Digos City, Davao del Sur, throughout the Academic Year 2020-2021.
Methodology: Complete enumeration was utilized to collect data from 133 respondents enrolled in the Bachelor of Science in Development Communication (BSDC) program. A conjoint analysis was used to analyze the 25 combinations of factors and attributes generated through orthogonal design.
Results: Most students reside in rural areas, and the majority are female. In terms of students' technological profile, the students' years of internet usage belong to 5 years or more of accessing the internet. For students' device ownership, the students are using their smartphones. While the students' primary device used for internet connection was their mobile phones. In terms of students' primary type of internet access, cellular was the source for internet access. Further, the study revealed that the respondents' preferred type of instruction was through synchronous discussion (utility=0.294), combination of Google Classroom and Facebook application (utility=0.551) as the preferred teaching strategy/platform, and late in the afternoon (utility=1.170) as the preferred time variable in learning program core subjects.
Conclusion: The programmay design a teaching-learning strategy thatencourages theapplication of these major study findings. This is an opportunity to efficiently deliver instruction and assess the learning of students. Although the combination of Google Classroom and Facebook Application was pointed out, synchronous discussions were still preferred, particularly for courses that involve laboratories.Additionally, it is to arrange the core subjects in the late afternoon, particularly those subjects with laboratory work, for both teachers and students to cope with the adjustment set-up in holistic aspects. Future researchers are recommended to explore other factors and attributes, especially in learning under the new normal.

Keywords: development communication, students' preference, teaching-learning, new normal, conjoint analysis

1. INTRODUCTION

Communication serves as the cornerstone of human functions across various aspects of life. This is especially vital in the realm of education, exerting influence on both educators and learners. The dynamic interaction between educators and learners is of utmost importance in the process of imparting knowledge and skills. According to the World Health Organization (WHO) in 2020, the initial outbreak of COVID-19 took place in Wuhan, China, in late December 2019 and continued to persist in 2021. Bender (2020) observed that countries globally have implemented ways to adapt to the changing landscape of education in light of the increasing influence of the virus. This led to a transformation of traditional communication methods. This transformation led to the introduction and innovation of new teaching methods, mostly defined by online distance learning via social networking platforms. In this altered educational landscape, other strategies, such as self-paced learning through printed hard copies of coursepack, have become prominent.

Therefore, the utilization of online education via social media platforms plays a vital role in facilitating the process of teaching and learning, utilizing both synchronous and asynchronous approaches. The synchronous approach requires both educators and learners to collaborate at specific times using online platforms like Zoom, Google Meet, and Facebook Live. Conversely, the asynchronous style offers flexibility by not requiring online engagement to happen simultaneously or within the same time zone. Enabling this procedure entails utilizing the functionalities of a Learning Management System (LMS). Furthermore, Facebook private groups and printed coursepack have emerged as the most accessible and convenient methods for self-assisted learning for both professors and students. These tools are available in both digital and hard copy versions (Mahoney and Hall, 2020). Aside from accompanying audio and video presentations, educators can assign assignments for self-guided learning on this virtual platform. They possess the capacity to upload discussion files and downloadable media to augment the overall learning experience and advancement of the students. Different methods had an impact on the communication dynamics within the teaching-learning system and required adjustments (Perveen, 2016; Magsambol, 2020).

In the synchronous and asynchronous teaching-learning system, educators and learners are presently exploring and evaluating the most efficient and practical platform and mode for adapting, facilitating, and maintaining the educational objectives throughout the entire academic process. Concurrently, adjustments have been implemented to the syllabus of the new curriculum. The internet and technology play a crucial role in pushing students to use digital technology and take advantage of the characteristics of Information Communication Technology (ICT) on technological advances in the 21st century. This occurs while the world is dealing with a crisis (Mahoney and Hall, 2020).

Thereby, Davao del Sur State College (DSSC), located in Digos City, is currently implementing adjustments to its teaching and learning approaches to adapt to the new modalities presented by the new normal education system. Further, the institution's administration was strongly encouraged to ensure an excellent teaching and learning environment for students amidst the ongoing period of adjustments.

1.1 OBJECTIVES OF THE STUDY

This study aimed to determine the Development Communication Students' Preference in Teaching-Learning during the New Normal. Specifically, this study was conducted:
1. To determine the Development Communication students' socio-demographic profile;
2. To determine the students' technological profile; and
3. To identify the students' most preferred teaching-learning environment in attending the core subjects of Development Communication during the new normal.

2. MATERIAL AND METHODS

2.1 Research Design

This study employed a descriptive quantitative research method. This method aims to describe the desirable characteristics of the sample being studied. There is only one sample, and there is no comparison group (Omair, 2015). In addition, this study utilized a conjoint analysis to explicate the communication preferences of students in the teaching-learning modality. Conjoint analysis explores the impact of specific features on the preferences of a population by examining how individuals collectively evaluate these attributes (Rao, 2014). Conjoint analysis examines the optimal combination of attributes and corresponding levels to maximize preference.

2.2 Sampling Design and Technique

The sampling technique employed in this study was complete enumeration. This method involves a thorough count of every unit or element within the entire universe or population from which data is gathered. According to Singh and Masuku (2014), complete enumeration is most appropriate for small population categories when it is possible to count each unit individually.

2.3 Data Gathering Procedure

In the process of data gathering, the researcher adhered to the following procedures: prior to the conduct of data gathering, a letter asking permission to conduct was approved and received from the college president. Before providing the respondents with complete details on the survey questions and directions on how to participate in the study, a consent form was also given to them. In compliance with the stringent regulations prohibiting in-person interactions due to the potential for COVID-19, the data collection was carried out via an online platform. Thus, Google Forms and Google Classroom were used, as well as email and Messenger, as alternative ways.

3. RESULTS AND DISCUSSION

Figure 1 revealed that less than Php11,000.00 has a total of 83.46% as the highest percentage. The Philippine peso (Php) is the official currency used in the Philippines. Thus, the dominant monthly household income of students' families belongs to the low-to-average income class. Consequently, after completing their secondary (high school) education, students from low-to-average-income families opt to enroll in public tertiary institutions, also known as colleges, as an accessible and affordable option to continue their education.

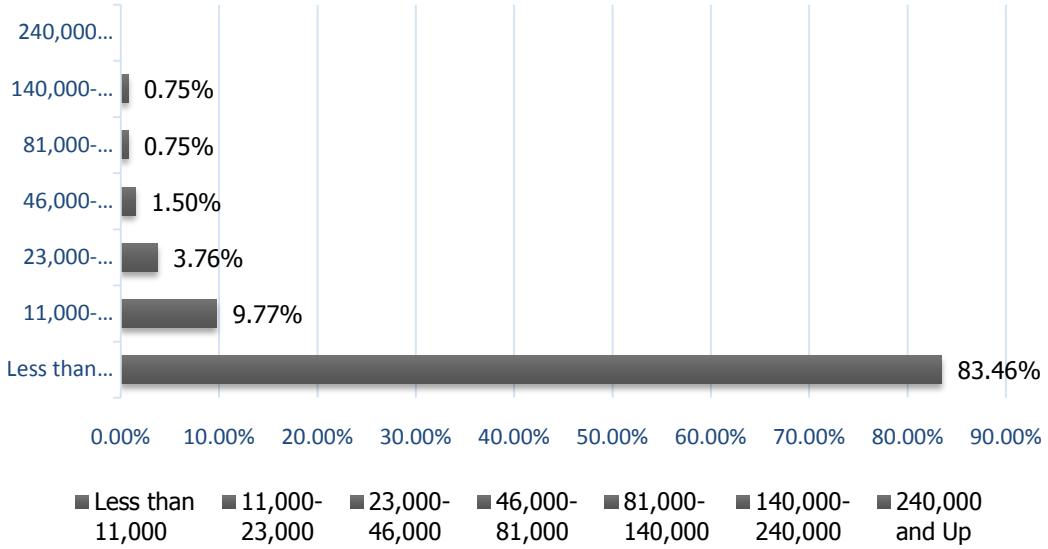

Fig. 1. The Development Communication Students' Socio-demographic Profile in terms of Household Income.

Thisalso coincides with the findings of De Vera III (2020), which concluded that Filipinos predominantly belong to the low-wage earner as a result of households living below the poverty line.

3.1.1 Students' Gender Identity

Figure 2 revealed that females are the majority among males and LGBTQ+ who enrolled in the Bachelor of Science in Development Communication (BSDC), which obtained a total of 73.68%. The BSDC is one of the ideal programs for women to pursue a degree in tertiary education.

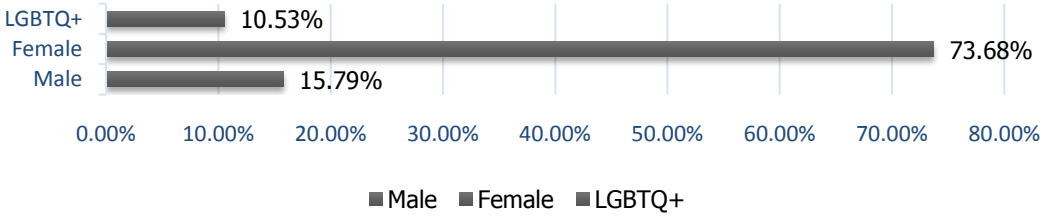

Fig. 2. The Development Communication Students' Socio-demographic Profile in terms of Students' Gender Identity.

3.1.2 Location of Respondents

Figure 3 revealed that there are 63.91% of rural residents with the highest percentage. Therefore, most of the BSDC students reside in rural areas rather than urban areas in Region XI (Davao Region) of Mindanao, Philippines.

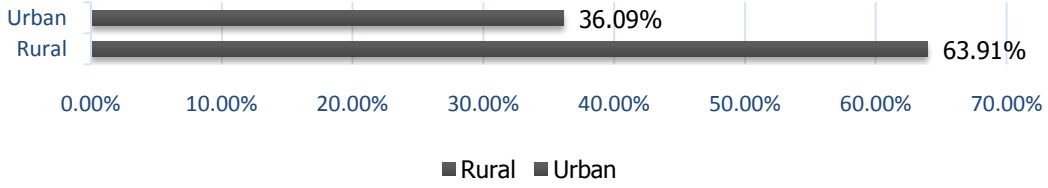

Fig. 3. The Development Communication Students' Socio-demographic Profile in terms of Students' Location.

3.1.3 Students' Number of Years of Internet Usage

Figure 4 revealed that the students who have been using the internet for 5 years or more had the highest garnered percentage of 69.92%. All students studying at public tertiary institutions must have access to the internet that is optimized in terms of availability and speed by the educational institution and the country as a whole.

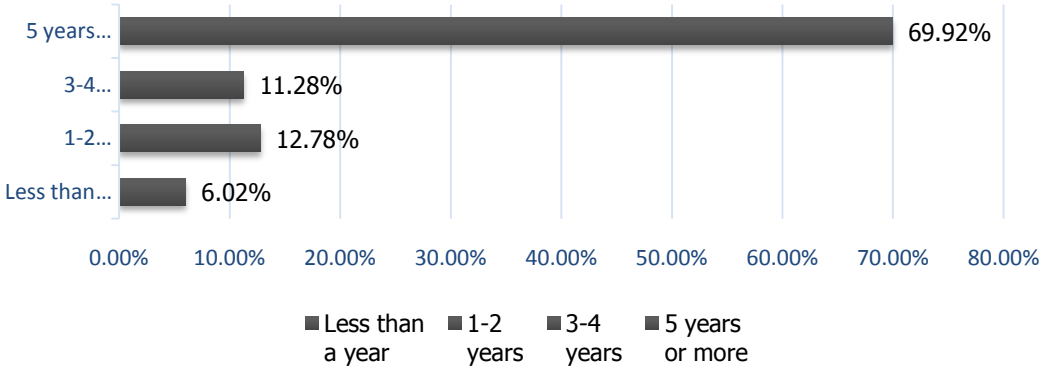

Fig. 4. The Students' Technological Profile in terms of Students' Number of Years of Internet Usage.

This result was supported by Hendrawan, Nugroho, and Permana (2020), who found that the Philippines was one of the countries with the highest rates of social media use globally. Thus, because of the rising demand for internet connections, people in the 21st century are predominantly using ICT gadgets to perform all of their transactions online.

Further, this also correlates to another study that revealed that there were a lot of internet users in the Philippines. As of January 2020, there were 73.91 million internet users in the Philippines; in 2019 there were 76 million; in 2018 there were 69.6 million; in 2017 there were 64.1 million; in 2016 there were 48.54 million; and in 2015, there were only 46.37 million. It is possible to draw the conclusion that, as time goes on, the number of internet users rises in response to the growing demand for social media and online access (Sanchez, 2020).

3.1.4 Students' Device Ownership

Figure 5 revealed that the *own smart phone* garnered the highest response of 88%. Hence, the BSDC students utilized their *smartphones* to engage in online classes and carry out other necessary activities amidst the new normal. Technology is crucial for students' academic performance as it allows them to purchase their own devices for the sake of convenience and ownership.

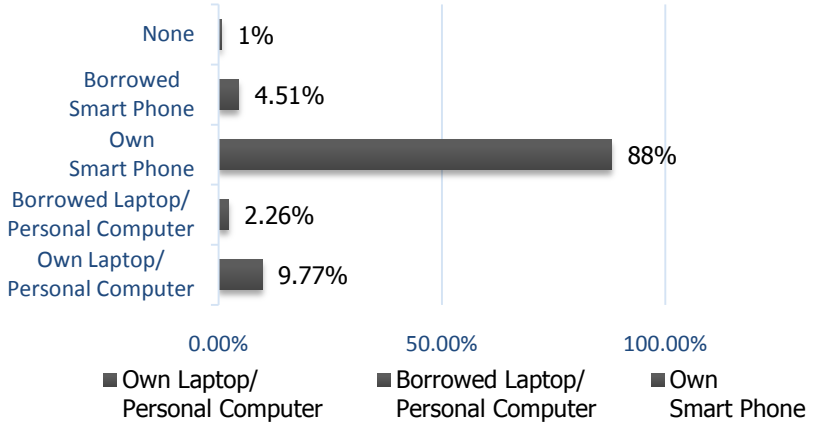

Fig. 5. The Students' Technological Profile in terms of Students' Device Ownership.

Thus, the growing importance of mobile devices during the pandemic period was mostly due to their ability to provide safe transactions without the need to venture outside public areas. Consequently, this highlighted the significance of smartphones as the most accessible and widely utilized internet device. Sanchez (2023) argues that individuals choose to acquire their own technology devices and materials for personal convenience in terms of time usage. Additionally, this approach eliminates the need for permission from others to access the devices and allows users to have complete ownership and responsibility for managing them according to their intentions. Lastly, people prefer to possess their own materials rather than borrow them due to their personal attachment to ownership. Individuals have a tendency to acquire items regardless of their price, as long as they can be privately owned and serve personal needs during times of necessity. Temporary acquisition of materials is a transitory state, while the ultimate goal for all essential items is to achieve permanence.

Therefore, the results coincided with Mishra et. al., (2020) conclusion that the tertiary education system was tested during the pandemic period. The Information and Communication Technology (ICT) units are essential for motivating students and teachers at the institution to access ICT devices. This is necessary to support the online education system, which has become the new standard for teaching and learning.

3.1.5 Students' Primary Device used for Internet Connection

Figure 6 indicates that 91% of BSDC students prefer using mobile phones as their primary device for internet connection. Thus, it is the most commonly accessible, with valuable features that are powerful for use in maintaining online distance learning through virtual classrooms. The policymakers of the institution may make adjustments within the capacity level of mobile devices so that students can effectively adapt.

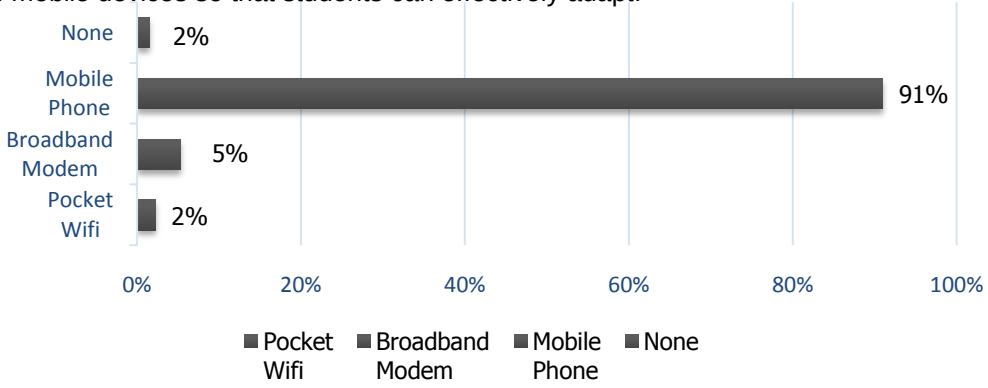

Fig. 6. The Students' Technological Profile in terms of Primary Device used for Internet Connection.

These results agree with the findings of Lowenthal et. al. (2020), which suggest that internet technology has become more prevalent in mobile devices as part of the ongoing modernization of ICT. According to De Vera III (2020), consumers in the Philippines use various devices for online transactions, with a particular emphasis on mobile phones due to their portability and convenience, especially during the pandemic. This was due to the fact that mobile devices were the most cost-effective, portable, and user-friendly gadgets, making them the preferred choice for internet access in the Philippines.

3.1.6 Students' Primary Type of Internet Access and Internet Provider

Figure 7 revealed that the*cellular* has the highest rating of 78.20%. Therefore, the institution established a standard learning interface that easily allows cellular users to access the learning process of the new normal.

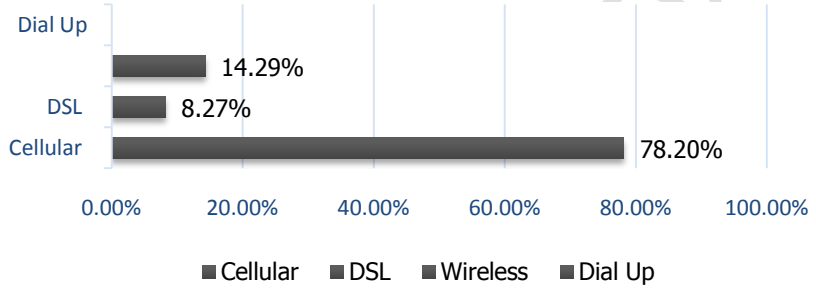

Fig. 7. The Students' Technological Profile in terms of Primary Type of Internet Access and Internet Provider.

As revealed in the study, cellular is the most accessible students' primary type of internet access and internet provider, as correlated to Mishra et. al. (2020) that this is due to its high accessibility, affordability, and convenience. Cellular phones underwent technological advancements, leading to the development of smart phones. As of June 2020, smart phones are the fastest internet service providers in the Philippines, depending on download speed in Mbps (Lowenthal et. al., 2020).

3.2 Development Communication Students' most preferred Teaching-learning Environment

Table 1. Teaching-Learning Environment Results

Teaching-Learning Environment Result			
Variables	Factors	Utility Estimate	Preference
Type of Instruction	Offline Independent/Self-paced Learning	-0.246	3rd
	Uploaded Student Reporting using a presentation program (i.e. Powerpoint, slideshare)	-0.048	2nd
	Synchronous Discussion	0.294	1st
Teaching Strategy/ Platform	DSSC Learning Management System	0.424	2nd

	Google Classroom	-1.094	5th
	Facebook Messenger	0.089	3rd
	Combination of Google Classroom + Facebook Application (i.e. Closed Group and Messenger)	0.551	1st
	Teleconferencing Application (i.e. Zoom and Google Meet)	0.030	4th
Time	Early Morning(8:00-10:00)	0.292	4th
	Late Morning(10:00-12:00)	0.585	3rd
	Early Afternoon(1:00-3:00)	0.877	2nd
	Late Afternoon(3:00-5:00)	1.170	1st
(Constant)		12.415	

The results revealed that, in terms of Type of Instruction, BSDC students preferred synchronous discussion, which has the highest utility estimate of 0.294. In terms of teaching strategy and platform, the combination of Google Classroom and Facebook application was the most preferred by the students, with a utility estimate of 0.551. In terms of Time, Late Afternoon (3:00-5:00) was the students' most preferred time to attend class sessions, which obtained a utility estimate of 1.170.

The students' most preferred time for online distance learning appeared to be the late afternoon. The institution can adapt synchronous discussions to ensure they comply with the preferred time. By enabling students to participate in virtual attendance, their chances of attaining complete participation and active engagement increase. This was also supported by Medina and San Jose (2019), who stated that active participation in online learning is frequently associated with individuals who possess technological skills. However, it has been proven that whether the afternoon shift corresponds to a morning or evening preference has no impact on a student's academic performance or intellectual capacity. Learning development is influenced by various internal and external aspects, including commitment, motivation, the learning environment, and the instructors' attitudes and instructional approaches towards students (Heggart and Yoo, 2018).

According to Liu and Chuang (2016), Google Classroom reduces expenses by utilizing more affordable stationery and materials, while also conserving time and energy. Wijaya (2016) suggests that this can be a practical substitute to support the educational process when in-person interactions are prohibited in schools. The Google Classroom promotes student independence, engaged involvement, and passion, as young learners frequently use technology in their everyday routines. During the digital era, teachers must possess expertise, flexibility with new technology, and the ability to address global challenges, comparable to the requirements during the industrial revolution.

Further, according to the findings of Mahoney and Hall (2020), Facebook Application emerged as the primary substitute for Learning Management Systems (LMS) in a number of institutions globally throughout the pandemic. The features function as a dynamic gateway for teachers and students to effectively utilize the teaching-learning process. Social media serves as a platform for education and offers extensive connectivity, which makes this possible. It allows students to further engage with technology in their online distance learning, particularly in the context of the new normal.

These findings were grounded in the socio-psychological tradition of communication theory (Griffin, 2011) as its theoretical framework. It revealed that students, even during the new

normal, desired synchronous discussions. This enables them to continue experiencing progressive learning and fulfillment, even in a virtual setting. Moreover, Flannery (2020) emphasized the importance of establishing a continuous and proactive connection with instructors, especially during the transition to the new normal. The teachers may monitor and assess techniques to develop a sustainable online platform that addresses the students' needs for excellent education during the new normal teaching-learning system of the institution.

Table 2. The Most Important Factor According to the Students

Importance Average Score Value	
Teaching Strategy/platform	53.712
Time	28.660
Type of Instruction	17.628
Averaged Importance Score	

Among these three teaching-learning variables, the average score value for their importance indicated that students rated the teaching strategy or platform with the highest significance, which had an overall value of 53.712. Hence, students consider this aspect to be of utmost importance, as it significantly affects the effectiveness of online distance learning and can impact their academic performance. Flannery (2020) asserts that students place the highest importance on the platform their lecturers use during the entire duration of classes.

Moreover, Lapitan et. al., (2021) argues that students should establish an agreement on using many platforms for class discussions, since this is considered the crucial component to be agreed upon at the beginning of the program. The students commonly express their concern to their teachers about the issue of sustainable internet access. As a result, they inquire about alternative teaching and learning methods to ensure efficient virtual learning while in their respective households.

Table 3. The table of Correlations for observe and predicted preferences

Predicted Preference	r	Strength of Relationship	p-value	REMARKS
Observe Preference	.737	High Correlation	.000	Significant

The table shows the correlation between observed and estimated preferences. The table shows the correlation between the actual and expected preferences. The observed preferences show a strong correlation with the expected preferences, with a correlation coefficient of r = 0.737. The p-value of 0.000, which is less than the significance level of 0.05, indicates that we can reject the null hypothesis. It means that there are strong and significant relationships between the observed preferences and the expected preferences.

4. CONCLUSION

The study reveals that students with a technological profile indicating 5 or more years of internet usage predominantly use smartphones as their primary device for internet access, relying on cellular networks. The preferred teaching-learning environment, which highlighted synchronous discussion, emphasizes the importance of proactive communication between teachers and students, which is crucial in the context of the new normal. The preferred teaching strategy/platform, a combination of Google Classroom and Facebook Application (Closed Group and Messenger), is synchronous, aligning with the students' preference for

late afternoon classes. Notably, Teaching Strategy/Platform and platform emerge as the most crucial variables for effective online learning.

The academic program should adopt the suggested teaching strategy/platform and take into account scheduling program subjects, especially those with laboratories, in the late afternoon. Encouraging collaboration with Local Government Units is also recommended to ensure the availability of essential resources, thereby creating an optimal environment for online learning. Future researchers may explore other factors and attributes to attain a thorough comprehension of the learning dynamics during the new normal.

Consent

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

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