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RESEARCH ARTICLE

REVISED Exploring the Digital Health Landscape: How adolescents living in urban and rural Vanuatu use online platforms to access health information

[version 3; peer review: 3 approved, 1 approved with reservations]

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v3 **First published:** 28 May 2025, **5**:148
https://doi.org/10.12688/openreseurope.19670.1
Second version: 25 Sep 2025, **5**:148
https://doi.org/10.12688/openreseurope.19670.2
Latest published: 24 Oct 2025, **5**:148
https://doi.org/10.12688/openreseurope.19670.3

Abstract

Background

Investigating the use of online platforms by adolescents living in the Pacific Islands is important to understand how they navigate online resources to make informed decisions about their health. This study explores the use of online platforms, by adolescents in Vanuatu for health-related purposes.

Methods

A total of 197 students (58% from an urban school and 42% from a rural school) completed a survey which collected quantitative and qualitative data about their use of digital technologies for health.

Results

Results show that 77% of participants owned a mobile phone, which was mostly used to listen to music (34%) and play games (22%). Only

Open Peer Review

Approval Status ✓ ✓ ? ✓

	1	2	3	4
version 3 (revision) 24 Oct 2025	✓ view	✓ view		✓ view
version 2 (revision) 25 Sep 2025		? view		? view
version 1 28 May 2025	? view	✗ view	? view	

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24% (n= 47) reported to have used apps, social media or websites for their health. Social media was the preferred category to use for health information, among both urban (25%) and rural (11%) participants, with Facebook, TikTok, YouTube, Instagram, and Twitter being the most frequently mentioned platforms. Reasons included, to gain knowledge, watch videos, chat with friends and look at posts. To search for health information, social media was more commonly used by rural students (12%) compared to urban students (8%). Conversely, search engines were more popular among urban students (12%) than rural students (5%). For discussing health topics online, social media was the predominant platform in both urban (10%) and rural (9%) areas.

Conclusions

While reports often suggest a digital divide between urban and rural areas, results from our study challenge this with our findings showing similarities in the use of online platforms for health information between urban and rural adolescents in Vanuatu. Our paper considers the influencing factors of social media use for health-related purposes, reflects on cultural sensitivity, identifies the risks of misinformation and regards the role of policy and education as essential for effectively engaging this population with digital health tools, to promote positive health outcomes.

Plain Language Summary

Young people are avid users of digital technology for information, but there is not a lot of research on their specific needs and how they use this technology for health in Vanuatu. With many sources available, it is important for researchers, healthcare providers, and educators to understand how adolescents in Vanuatu use online technology for health information. Our study found that in both urban and rural areas of Vanuatu, adolescents prefer using social media compared with other digital tools to access and discuss health information. These findings can help guide the inclusion of digital health literacy in school programs, improving knowledge in this group. Although only a small number of adolescents reported using digital health tools, their patterns of use are important as they highlight the need for tailored initiatives and help understand digital health trends among adolescents in Vanuatu.

Keywords

Melanesia, Pacific, adolescents, health information, digital health, social media

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This article is included in the Horizon 2020 gateway.

This article is included in the Family Farming, Lifestyle and Health in Small Islands, Countries and Territories collection.

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Competing interests: No competing interests were disclosed.

Grant information: This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No [873185]: (Family farming, lifestyle, and health in the Pacific [FALAH]); and the Pacific Island University Research Network grant 2016 N° 042016. This project was also supported by a University of Sydney Office of Global and Research Engagement, Sustainable Development Goals scheme, 2022.
The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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How to cite this article: Amon KL, Wattelez G, Nedjar-Guerre A *et al.* **Exploring the Digital Health Landscape: How adolescents living in urban and rural Vanuatu use online platforms to access health information [version 3; peer review: 3 approved, 1 approved with reservations]** Open Research Europe 2025, **5**:148 https://doi.org/10.12688/openreseurope.19670.3

First published: 28 May 2025, **5**:148 https://doi.org/10.12688/openreseurope.19670.1

REVISED **Amendments from Version 2**

In the revised version, the Conclusion section was reworded to ensure clarity, accuracy, and alignment with the scope of the study. Changes were made to avoid overgeneralisations and unsupported comparative claims, focusing instead on summarising the observed patterns of adolescent engagement with digital technologies. The language was refined to clearly reflect our findings, while still acknowledging the relevance of the study within the broader context of digital health information access.

Any further responses from the reviewers can be found at the end of the article

Introduction

The use of digital technologies have transformed the ways in which information is access and shared, driving the development of the contemporary digital landscape. In this context, adolescents' use of social media platforms has become a common avenue for accessing and sharing personal health-related information (Hausmann *et al.*, 2017; Moreno *et al.*, 2018). Adolescents worldwide increasingly engage with online platforms as sources to search and discuss information related to health, marking a significant shift in their information-seeking behaviours as discussed by Gray *et al.* (2005) and Skinner *et al.* (2003). Adolescence marks a pivotal stage for establishing lifelong health habits (Patton *et al.*, 2016), and as such, understanding their health information-seeking behaviours in various contexts is important. Studies show that adolescents engage and respond well to tailored digital education programs targeting health-related behaviour such as physical activity in Australia (Caillaud *et al.*, 2022) and the Pacific Islands (Galy *et al.*, 2019).

The Pacific Islands Countries and Territories (PICTs) consist of 22 islands in the world's largest region, the South Pacific (Craig *et al.*, 2022). Over several decades, there has been a rapid socio-economic transition in the South Pacific region, characterised by modernisation, urbanisation, increased imports, and the digitisation of urban, peri-urban, rural, and tribal areas (Bertrand-Protat *et al.*, 2024; Galy *et al.*, 2020; Wattelez *et al.*, 2024a). The process of digital transition within these PICTs has taken time to unfold (Cave, 2012). Presently, there is a need to understand the relationship between adolescents and their use of media and digital environments. Literature addressing this topic is limited, with little evidence in the Pacific Islands. In countries like New Caledonia, a high number of digital devices are available in households with wide disparities across urban and rural areas related to the ongoing digital development of the country (Nedjar-Guerre *et al.*, 2023). However, little is known about the use of digital technologies for health information by adolescents in Vanuatu, particularly comparing urban and rural areas.

With over 80 islands, Vanuatu is home to an estimated population of 328,928 people (https://worldpopulationreview.com/countries/vanuatu). Linguistically diverse, English, French and Bislama are the official languages spoken but also have 138 indigenous Oceanic languages (Crowley, 2000). The interaction between traditional practices and contemporary influences shapes the health experiences of the adolescent population in Vanuatu. Like many adolescents around the world, adolescents in Vanuatu engage with the Internet, social networking sites, and other mobile app technology, making digital technology a promising avenue for health. However, unlike adults, adolescents may still be in the process of accumulating the skills necessary to gather and evaluate reliable health information online (Taba *et al.*, 2022). As such, the importance of their digital health literacy emerges as a pivotal factor for cultivating positive adolescent health and well-being outcomes. Digital health literacy represents the capacity to proficiently navigate health-related information and resources within digital environments (Oddone & Merga, 2025; Schulenkorf *et al.*, 2021) and warrants attention to address contemporary health challenges among this Pacific demographic. However, before this, it is crucial to gain insight into the current state of their online activities and behaviours related to health. Gaining insight into the patterns of use and purposes behind their engagement with online platforms for health-related information enables the development of effective educational initiatives and interventions that are tailored to their needs and preferences. This approach ensures that efforts to enhance digital health literacy are relevant and impactful for adolescents.

Access to, and the use of, digital technologies vary across urban, rural, and tribal areas. With higher population density and greater investment, urban areas generally have better access to healthcare services, digital infrastructure, and technology. Adolescents in these areas can benefit from a wider range of digital health tools, including mobile health apps and online health information resources. The challenge lies in ensuring the quality and reliability of the information accessed (Swire-Thompson & Lazer, 2020), as well as addressing issues related to data privacy and security (Razi *et al.*, 2020). Additionally, adolescents living in urban areas may face different health issues compared with their rural and tribal counterparts, necessitating tailored digital health (literacy) interventions (Jacobs, 2020; Miller *et al.*, 2018).

For adolescents living in rural areas, digital health technologies can bridge the gap caused by geographical isolation (Wang *et al.*, 2011). Telehealth services, for instance, can enable adolescents to access medical consultations without the need for long and often difficult travel to urban centers. However, the digital divide remains a significant barrier, with limited availability or access to resources and infrastructure for reliable internet connectivity in combination with limited digital literacy posing challenges to the effective use of technologies (Ji *et al.*, 2024; Watson & Fox, 2021; Ye & Yang, 2020). Efforts to improve infrastructure and provide digital education are crucial to maximising the benefits of digital health solutions in these regions.

Furtherstill, residents in tribal areas present a unique context where traditional practices and beliefs play a significant role in healthcare. Integrating digital health technologies in these

areas requires a culturally sensitive approach that respects and incorporates traditional health practices (Galy *et al.*, 2022). Community engagement and collaboration with tribal leaders are essential to foster trust and acceptance of digital health solutions. Digital tools may be used to document and preserve traditional health knowledge, creating a valuable resource for both current and future generations.

This study therefore aims to explore the health information-seeking behaviours of adolescents in Vanuatu and identify their preferred online platforms for fulfilling these needs. Recognising the unique cultural and contextual factors in Vanuatu, this study aims to shed light on how adolescents living in urban areas compared with those living in rural areas navigate online resources to make informed health decisions. To address this aim, data from the current study will be analysed to answer which websites, social media platforms or apps, were:

i) their favourite to use for health,

ii) used to search for health information, and

iii) used to discuss health topics.

By understanding their approach to seeking health information, we aim to bridge gaps in understanding and potentially tailor interventions that resonate with the specific needs of adolescents in Vanuatu, contributing to the advancement of their overall health outcomes.

Methods

Setting

This study was a part of the European *Family Farming, Lifestyle and Health in the Pacific* (FALAH) project (n° 873185) (Fotsing & Galy, 2019). As such, Ethics approval for FALAH projects including fields of research in Fiji, New Caledonia, Solomon Islands, and Vanuatu was obtained from the Consultative Ethics Committee of New Caledonia (CCE 2018-06 001 and 2023-10 012). This study was conducted in accordance with the requirements of the Declaration of Helsinki (World Medical Association [WMA], 2024).

Vanuatu archipelago is located in the South Pacific Ocean and consists of more than 80 islands. The two schools involved were selected based on the following criteria: (1) location, i.e. rural/urban; (2) island location, i.e. Esperitu Santo/Efate (amongst the most populated islands); (3) class grades, i.e. from levels/years 9 to 11; and (4) sufficient student numbers in the targeted class grades ($n \geq 150$). The study was authorised by the Vanuatu Ministry of Education and the selected schools were contacted to present the research design to the staff in charge of the establishment. Before data collection, potential student participants and their parents were given written information about student involvement and details of the research study. This provided them an opportunity to opt out of participation in the study.

Procedure and participant sample

School recruitment. To understand the cultural context, members of the University of Sydney research team travelled to Vanuatu in October, 2022. During this trip, they visited two schools which were identified through existing connections with the FALAH network of international scientific teams (https://falah.unc.nc/en). During the school visits, research team members met with the principals and deputy principals and explained the details of the research study and the delivery of the project workshops. The meeting included discussions about the school curriculum and student environment to understand the educational context and a tour of the school grounds. Following the initial meeting, the principals reached out to the research team about their interest in involving their students. From this visit, both schools signed up to participate in the study.

Data collection. In June 2023, members from the University of Sydney and the University of New Caledonia research teams travelled to Vanuatu to run the project for data collection. The classes and students at each school were selected based on teacher interest and consent to participate in the study.

A participant information template was sent home with the students, providing parents with information about the study, and an opportunity to opt-out of the study if they did not want their child to participate. If no signed note was returned, it was understood as consenting to involvement in the study. For parents who were living in remote, isolated islands and were unable to sign and return the forms due to illiteracy, we obtained verbal consent from community authorities (directors, teachers, and Kustom leaders). In research, consent is sought from both parents and adolescents for studies involving vulnerable populations, including young people. However, in Vanuatu when parents are not available, such as in the case of students residing in boarding schools or living in remote islands, in line with local customs it is common practice that a representative of authority (for example a teacher, school director, or Kustom leader) can approve the ethical aspects of the study. The principals of the participating schools provided consent to involve their students in our study. In instances where written consent was not feasible, oral or verbal consent was accepted. The students whose parents did not opt them out of the study, had consent from community authorities, but did not want to participate, verbally expressed this to their teacher or a research team member and were free to leave the classroom without participating in the study. All adolescents provided individual written consent through the submission of the online survey.

Students completed a questionnaire either offline via a REDCap mobile app on digital tablets or online via the same REDCap questionnaire on a computer in a classroom. The questionnaire collected both quantitative and qualitative data. Depending on the student's preferred language, the questionnaire could be completed in either French or English. It is recognised that these languages may not be the student's first language, which is likely to be Bislama, however, it was a requirement that they could read and write in either French or English, as taught in their school curriculum. During the completion of the questionnaire, teaching staff and researchers remained in the classroom in the event students required support to better understand any of the questions. To minimise bias in the administration

of the questionnaire, the teachers were instructed that they were allowed to provide definitions of any words within the questionnaire that the participant may not have understood, but were asked not to provide any examples that may suggest answers to the questions.

Data analysis

This study is a part of a larger research project aiming to better understand the lifestyle and behaviours of adolescents living in the PICTs and mainly focused on physical activity, diet and the use of digital technologies (Galy *et al.*, 2024a; Galy *et al.*, 2024b). Selected questions from the digital technology component of the questionnaire about the use of digital technology were adapted from an Australian survey (Armstrong *et al.*, 2021) and from a previous study conducted in New Caledonia that explored the impact of digital screen time on unhealthy food consumption (Nedjar-Guerre *et al.*, 2023). Results from the New Technologies and Medias and Digital Tools and Health sections of the questionnaire were analysed and this study presents the descriptive statistics and qualitative findings of digital technology use for health by adolescents living in Vanuatu.

Quantitative data. The use of digital tools was assessed through the following closed questions: 1) When you are on the computer and/or tablet, what type of actions do you most often performs? 2) When you are on the mobile phone, what type of actions do you most often perform? and 3) Do you use apps, social media or websites for your health? Responses to these questions, as well as the open questions that were categorised, are presented with percentages and shown with barplots.

Qualitative data. Within the survey, the following open questions were used to better understand participants' use of digital tools regarding health information: (1) "Which social media platform/site is your favourite to use for health? And what do you like about it?", (2) "For searching health information, which app, social media or website do you use?" and (3) "For discussing health topics, which app, social media or website do you use?" Participants were able to provide more than one response if they used more than one platform.

Where required, responses were first translated from French to English and then a simple content analysis was performed. Responses were assigned an open code that named the platform in that response. Similar codes were grouped together under axial codes. These were then grouped together under a category with a descriptive heading. For example, the axial codes "Facebook", "TikTok" and "YouTube" were grouped together under the category "Social Media", and axial codes "Google" was grouped with "Chrome" under a "Search engine" category. KA and GW reviewed all coding and discussed the final codes. There were no disagreements requiring further discussion.

This study employed a descriptive cross-sectional design to explore adolescents' use of online platforms for health in Vanuatu. Given the limited number of participants who reported engaging with digital health tools, inferential statistical analysis was not pursued, as subgroup comparisons would not yield reliable or generalisable results. The aim was to provide foundational insights into digital health engagement in a context with minimal prior research.

Results

Participants

A total of 245 participants were recruited from two schools in Vanuatu. Of these, 197 participants completed the questionnaire. Participants were aged between 14 and 20 years, with 97% aged between 14 and 18 years. Majority of participants from both locations were female (62% in the urban school and 66% in the rural school; Table 1).

Device use

A total of 79.8% (n= 91) of participants from the urban location and 72.3% (n= 60) from the rural area reported to have owned a mobile phone. From this, 25.3% (n= 23) of participants from the urban location and 6.6% (n= 4) from the rural location shared the phone with other people.

Of the activities conducted on a computer or tablet, 43% of the participants identified "listening to the music" as the most performed, followed by completing "homework" (39%), "viewing videos" (30%), and "playing games" (29%). The least performed activities conducted by participants on a computer or tablet were "watching social network feed" (6%), "discussion" (8%), and "other" (8%), which were not specified (Figure 1).

Of the activities conducted on a mobile phone, 34% of the participants identified "listening to the music" as the most performed, followed by completing "playing games" (22%), "viewing videos" (20%), and "homeworks" (19%). The least performed activities conducted by participants on a mobile phone were "watching social network feed" (7%), "discussion" (6%) and "other" (4%), which were not specified (Figure 2).

Only 24% (n = 47) of the total number of participants reported to have used apps, social media or websites for their health. When analysed based on location, more participants from the urban location reported to have used apps, social media or websites for their health (29%, n= 33) (Figure 3).

Table 1. Number of participants according to school location and sex.

	Number of participants	Average age (sd)
Urban	114	16.3 (1.27)
Female	63	16.1 (1.23)
Male	51	16.4 (1.32)
Rural	83	15.4 (0.82)
Female	53	15.4 (0.78)
Male	30	15.5 (0.91)

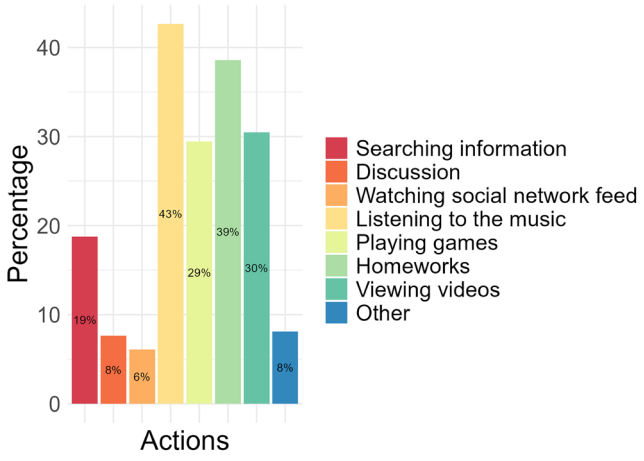

Figure 1. The most performed activities conducted on the computer and/or tablet by participants.

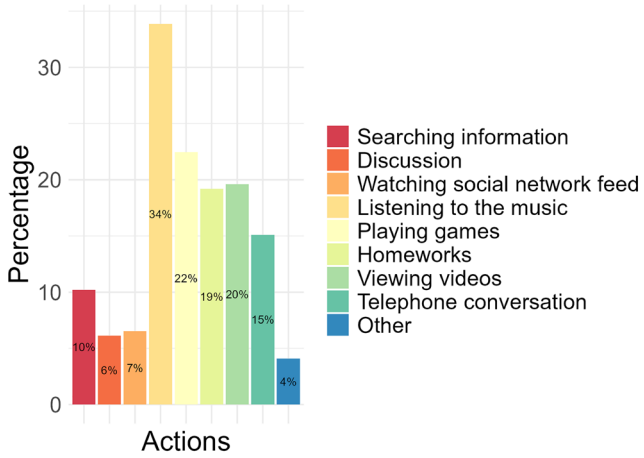

Figure 2. The most performed activities conducted on the mobile phone by participants.

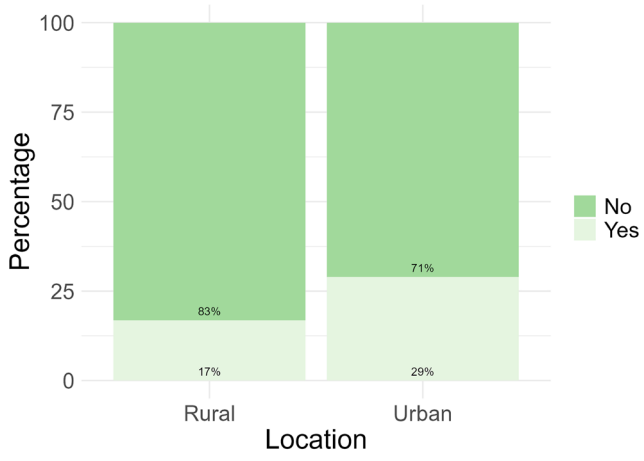

Figure 3. Participant use of apps, social media, and websites for health information by location.

Qualitative analysis

Of the 197 number of total participants who completed the questionnaire, 24% of participants reported that they used apps, social media, or websites specifically for their health. Due to the small number of respondents in this subgroup, results are presented descriptively without stratification by demographic variables. This approach was chosen to avoid over-interpretation and to maintain the integrity of the exploratory nature of the study.

To find out which platforms were: i) their favourite to use for health, ii) used to search for health information, and iii) used to discuss health topics, participants were asked open-ended questions and a simple content analysis was performed (see Supplementary Tables 1–3 in the Appendix). The following results present the qualitative findings from the urban and rural areas.

Favourite online platforms to use for health. When asked the question "Which social media platform/site is your favourite to use for health? And what do you like about it?", 38 participants (n= 29; 25% from urban and n= 9, 11% from rural locations) reported the use of online platforms including Facebook (n= 20), TikTok (n= 16), YouTube (n= 5), Instagram (n= 2), and Twitter (n= 1) (Figure 4a) which was grouped together under the "social media" category as the participants' favourite (Figure 4b). A total of 3% (n= 3) of urban location responses and 1% (n= 1) of rural location responses also included "Google" (n= 3) and "Chrome" (n= 1), and was grouped together under the "Search engine" category. Responses categorised under "Unclear" (1%, n= 1, from urban and 4%, n= 3 from rural) included responses which could not be translated into English or did not explicitly name a platform or website to answer the question (Figure 4). From these responses, only 7 included reasons what they liked about these platforms. Reasons were summarised and categorised into "Gain knowledge" (71%, n= 5), "Watch videos" (43%, n= 3), and "Other" which included to "chat with friends" and "look at posts" (29%, n= 2). Two responses (1 from urban and 1 from rural) were empty with no text response despite indicating they used social media platforms or websites for health.

Online platforms used to search for health information. Following analysis of the question "For searching health information, which app, social media or website do you use?" responses grouped together under the "social media" category was found to be the most used in the rural area (12%, n= 10) compared with the urban area (8%, n= 9) (Figure 5b). The platforms grouped into the social media category included Facebook (n= 9), TikTok (n= 3), YouTube (n= 7), and a broad 'social media' response (n= 3) (Figure 5a), as reported by 19 participants. The most used in the urban area was found to be "search engines" (12%, n= 14) compared with the rural location (5%, n= 4). Responses for these included "Google" (n= 16), "Chrome" (n= 1) and "I'm usually looking for, regardless of the website" [translated from: "Je cherche en générale, peut importe le site"] (n= 1). Only one participant from the urban location (1%) responded with "websites". There were 2 responses from the urban location that could not be translated

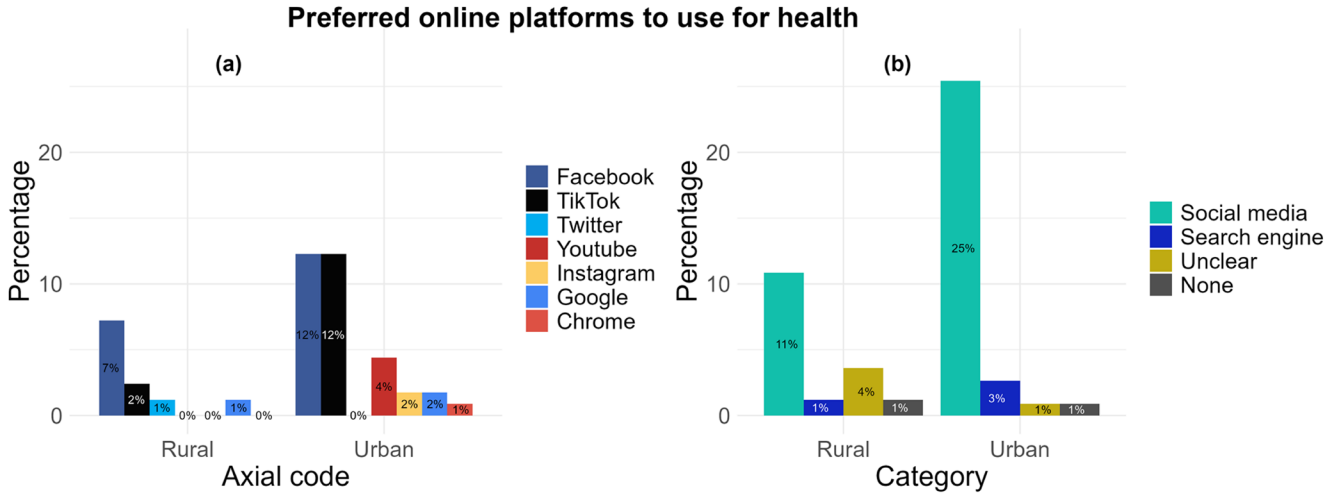

Figure 4. Comparing rural and urban participant preferences for using online platforms for health: (**a**) aggregation by axial code, (**b**) aggregation by category.

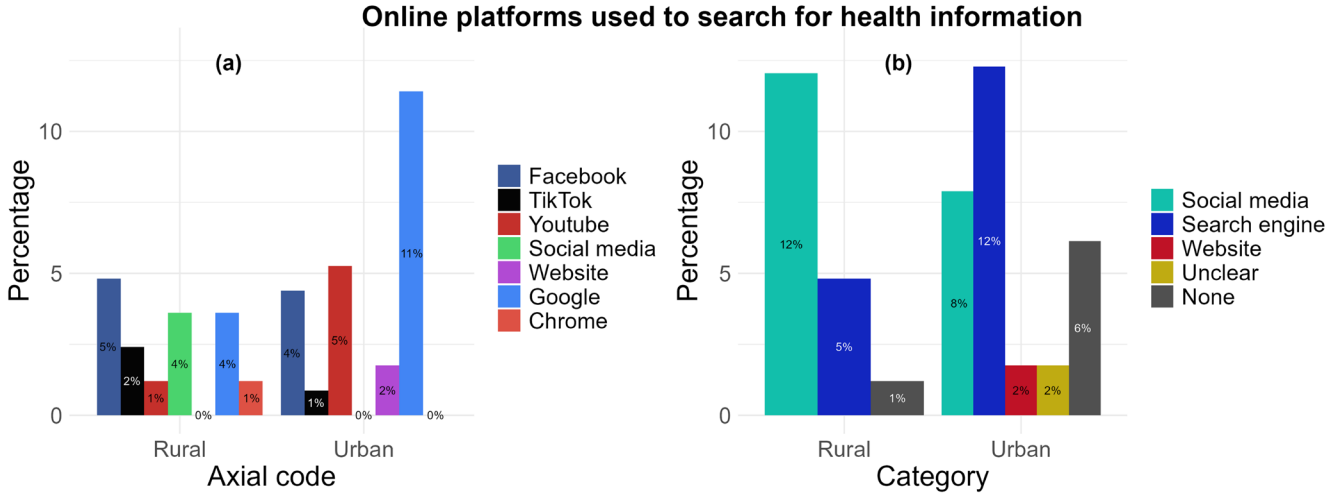

Figure 5. The preferred use of types of online platforms by rural and urban participants' to search for health information: (**a**) aggregation by axial code, (**b**) aggregation by category.

into English or did not explicitly name a platform or website, and were categorised under "Unclear" (2%). Participants from both the urban (6%, n= 7) and rural (1%, n= 1) locations indicated responses but either did not type a response or responded with "I don't use" despite stating they used social media platforms or websites for health, but may not use it specifically to search health information (Figure 5).

Online platforms used to discuss health topics. When asked the question "For discussing health topics with other people online, which app, social media or website do you use?", a total of 19 participants from both urban (10%, n= 11) and rural (9%, n= 8) locations reported the platforms Facebook (n= 13), Instagram (n= 1), Twitter (n= 1), YouTube (n= 2), Snapchat (n= 1), and a broad 'social media' response (n= 2) (Figure 6a) which was grouped together under the "social media" category (Figure 6b) as their most used. Two responses from the urban location (2%) and one response (1%) from the rural location were categorised under "Search engine" and these included "Google" (n= 3) responses. Only three participants in the urban location (3%) identified "Apps" and these included chat apps including "Messenger" (n= 2) and a "Food network" (n= 1) responses. "Website" was also identified by three participants from the rural location (4%). There was only one response (1%) which was categorised under "Unclear" and included a response that could not be translated into English from the urban location. Participants from both the urban (15%, n= 17) and rural (2%, n= 2) locations provided responses which either did not type a response or responded with "I don't use" despite stating they used social media platforms or websites for health,

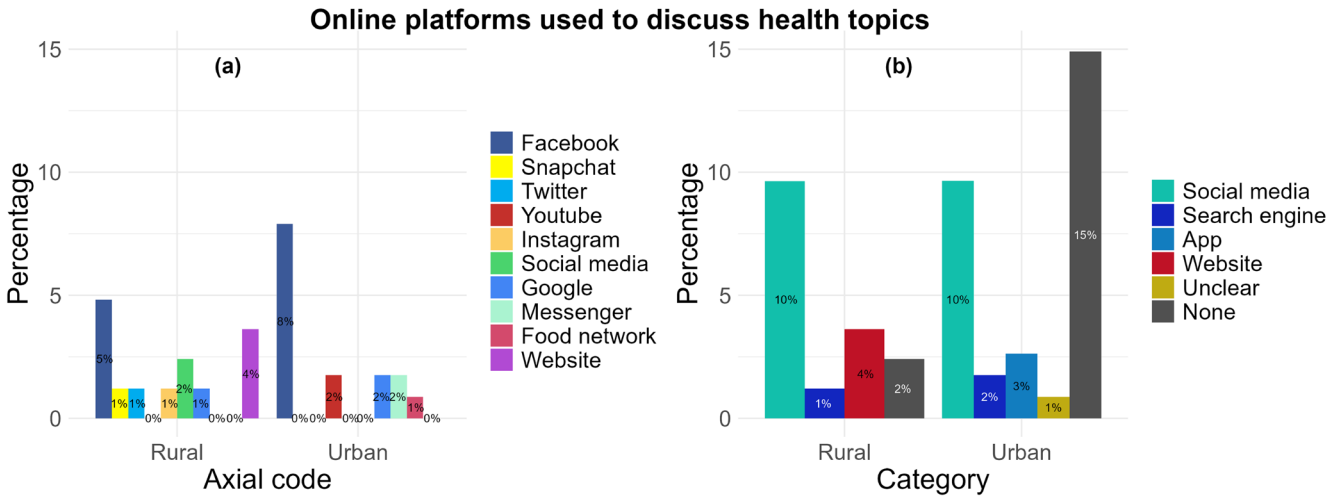

Figure 6. Types of online platforms preferred by rural and urban participants to discuss health topics: (**a**) aggregation by axial code, (**b**) aggregation by category.

this may suggest they do not use it to discuss health topics (Figure 6).

Discussion

Our study collected 197 completed questionnaires from adolescents in Vanuatu regarding their engagement with digital technology for health-related purposes. However, only 24% of participants reported using apps, social media, or websites for their health. Despite comprising a minority within the surveyed population, the significance of this subset cannot be understated. And whilst the study is descriptive in nature, it offers valuable data on digital health engagement among adolescents in Vanuatu, a population largely absent from existing literature. While reports often suggest a digital divide between urban and rural areas, the results from our study challenge this notion. Our current findings demonstrate that of the participants who reported having used digital technology for their health indicated similar responses across both urban and rural areas, suggesting that with access, there may not be a digital divide.

The analysis of findings from these adolescents reporting the use of digital technologies for their health holds importance as it provides insights into the health information-seeking behaviours of adolescents in Vanuatu. Understanding the preferences identified by this group serves as a pivotal point for targeted strategies to assist them with making appropriate health decisions. Tailoring educational initiatives, and resources to align with the needs and preferences of this population is required for effective engagement of digital and online health tools and positive health outcomes.

Influencing factors of social media use for health-related purposes by adolescents in Vanuatu

As children move from primary to secondary levels in school, tablets and mobile phones are the preferred device (Rich *et al.*, 2020). The type of device used plays a crucial role in shaping how adolescents in Vanuatu engage with health-related digital content. Smartphones are likely the most commonly used devices due to their portability and multifunctionality, allowing adolescents to easily watch videos, interact with online communities and access social media and other health apps. In this study, the participants used their mobile phones mostly for music-related activities and less likely to search for information or use social media. Computers and tablets, while less portable, offer a larger screen that enhances the length and viewing experience of content consumption. Completing homework was the second most reported activity to be conducted on these devices in the current study, following music-related activities. These entertainment and education-oriented activities appear to take priority over proactive health-information seeking and may help explain the low levels of engagement with using digital technologies for health-related information and engagement in our study. This is similar to findings from recent research (Black Dog Institute, 2024; Rich *et al.*, 2020). Listening to music (78%) and watching videos (72%) were in the top three activities (following socialising on social media, 85%) conducted on their smartphone or tablet by young people aged 11–18 years in South West England (Rich *et al.*, 2020). The device type can also affect the format of content that adolescents prefer. Short videos and quick updates particularly on social media platforms are more suited to smartphones, while websites and documents might be better viewed on tablets or computers. Whilst previous research found 71.48% of 270 health-related webpages were mobile-friendly, only 15.93% of them were designed in a way to optimise readability (Cheng & Dunn, 2017). The dissemination of health information through mobile phones, however, have been shown to be a health-promotion strategy that is useful and convenient (Cilliers *et al.*, 2018), with young people reported mobile phone use for seeking out information, advice and learning about health and illness, mental health and wellbeing, and physical fitness (Rich *et al.*, 2020).

Previous studies have shown that online search engines and websites were the most common tool to use to actively

search for health information (Freeman *et al.*, 2018; Gazibara *et al.*, 2024). In this current study, when asked about what online platforms they used to search for health information, the use of search engines was more popular to search for health information in the urban location compared with the rural location, where rural participants preferred to search health information through social media platforms. Social media platforms, including Facebook, TikTok, and YouTube, were also identified as the favourite to use for health-related activities and discussing health topics as identified by adolescents from both urban and rural areas. This aligns with current literature that adolescents from other regions use social media platforms to access health-related information, including topics such as healthy lifestyle behaviour (nutrition, physical activity, weight management, sleep), mental health, sexual health, substance use, and specific medical conditions (Armstrong *et al.*, 2021; Rich *et al.*, 2020). Popular platforms including Facebook, Twitter (now known as X), and YouTube act as accessible reservoirs of diverse knowledge, and serves as a space for peer interaction and social support, empowering adolescents with important health information (Moreno *et al.*, 2018; Rich *et al.*, 2020). Fostering a sense of community engagement, social media enables adolescents to share personal health experiences, practices and solutions within a digitally interconnected space. These findings have leveraged the potential social media has as a platform to delivering health interventions, with positive findings (Alvarez-Jimenez *et al.*, 2020; Amon *et al.*, 2022).

These findings were revealed by only a quarter of the total participants, however, this may be influenced by multifaceted factors that are characteristic of the Pacific Islands. Whilst there were no specific differences in use between rural and urban locations, the limited accessibility of internet infrastructure, coupled with socioeconomic disparities may significantly impact the opportunity to use digital technologies for these purposes. In addition, the amalgamation of traditional cultural norms with the current digital landscape shapes the acceptance and credibility of health information that is disseminated through these online platforms. The interactive nature of these platforms encourages open dialogues, enhancing health literacy and promoting discussions around taboo health topics in a culturally sensitive manner (Chen, 2023). Understanding these multifaceted and complex connections is crucial for a comprehensive understanding of adolescent use of social media for health-related purposes within the Vanuatu context.

Cultural sensitivity

Culture may affect health by shaping and influencing habits and behaviours related to precursors of health, development of disease, and by controlling their physical environment (Fleisher *et al.*, 2013). Interpretations of health and illness may vary with different cultural groups and ultimately inform why some cultural groups may choose to adopt or not adopt preventative health behaviours. Thus, health education materials need to be culturally appropriate. An important component of culture is language, and the impact of language on minority subgroups differs based on social and demographic characteristics. A lack of understanding of written English or French is a barrier that can cause misunderstandings that lead to inappropriate health decisions (Sauni & Neal, 2012).

The rapid dissemination of potentially culturally insensitive information is of concern. Vanuatu is culturally diverse which amplifies the susceptibility to misinterpretation of health-related content available online, and the lack of digital health resources in local languages can limit the reach and effectiveness of health initiatives.

Risks

Misinformation. Whilst social media serves as a means to access health information by adolescents in Vanuatu, it is unregulated which presents potential risks of misinformation (Suarez-Lledo & Alvarez-Galvez, 2021; Swire-Thompson & Lazer, 2020). Taba *et al.* (2022) explored the relationship between adolescents' self-efficacy and digital health literacy, emphasising the critical role these factors play in navigating online health information. Thus, while adolescents increasingly turn to social media for health-related information, their ability to discern credible sources from misinformation is often limited by their digital health literacy skills, emphasising the risk of misinformation, particularly in contexts like Vanuatu, where digital literacy education may be less prevalent. While participants in our study reported the use of TikTok as one of their favourites to use for health, Merga's (2025) systematic review cautions that the platform's entertainment-driven content and inconsistent credibility may pose risks to adolescent digital health literacy, particularly when health advice is delivered by influencers rather than qualified professionals. Adolescents with higher self-efficacy and better digital health literacy are more adept at evaluating the trustworthiness and relevance of online health content, thereby reducing their susceptibility to misinformation. Therefore, there is a need for targeted educational interventions and policies to enhance digital health literacy among adolescents, ensuring they can safely and effectively use social media for health information.

Exposure. There is evidence of passive health information exchange via social media (Raeside *et al.*, 2022). Findings from this current study show that adolescents in Vanuatu engage in several other activities on their devices. Thus, even if an adolescent is not actively searching for health-related information, their presence on online websites and social media leaves them open to a variety of unsolicited unhealthy promotional content. This exposure can significantly influence adolescents' health behaviours and perceptions. Potvin Kent *et al.* (2024) found that youth exposed to digital marketing of unhealthy foods, including fast food and sugary drinks, were more likely to consume these foods and more frequently. The constant exposure to promotional content can lead to increased consumption of unhealthy foods, contributing to poor dietary habits and related health issues. This highlights the importance of developing digital health literacy skills to help adolescents critically evaluate the online health information they encounter, whether intentionally sought or not. According to Oddone and Merga (2025) there is a role school library professionals and educators can take in the development of

adolescents' critical evaluation skills, which include questioning source credibility, recognising misinformation, and identifying fake expertise, to mitigate the risks. Without adequate digital literacy skills, adolescents are more susceptible to the persuasive tactics of digital marketing, which can exacerbate unhealthy behaviours and the risk of misinformation. Instead, equipping adolescents with these skills can empower them to safely navigate digital health spaces and responsibly make informed decisions about their wellbeing.

The role of policy and education

Policy and education play a crucial role in shaping adolescents' use of social media for health-related purposes. There is a required focus on equipping adolescents with the digital literacy skills needed to critically evaluate health information encountered online, consequently reducing the risk of misinformation (Taba *et al.*, 2022; Wendt *et al.*, 2023). Educational interventions, both within school settings and through community-based programs, play a significant part. For example, integrating digital literacy into the school curriculum can help students develop the necessary competencies to navigate the digital landscape effectively, whilst also providing them with free connectivity access. Also providing school staff such as onsite school nurses with such skills as additional resources. Additionally, community workshops and campaigns led by non-government organisations can provide practical guidance on identifying credible sources and understanding the potential impacts of social media on health behaviours. By fostering a supportive environment that encourages informed and responsible social media use, these policy and educational efforts can significantly influence adolescents' health outcomes. Further still, ongoing evaluation and adaptation of these programs are essential to address the evolving digital habits and health needs of adolescents in Vanuatu.

Limitations and future research directions

This study serves as an important direction to determine the online activities conducted by adolescents to access health information and communicate about health topics, between urban and rural areas in Vanuatu. Future research could explore cross-cultural comparisons of digital health behaviours among adolescents across Pacific Island nations, highlighting both shared challenges and culturally distinct approaches. A limitation of this current study is the low number of participants who completed the open-ended questions, which may affect the generalisability of the findings. Future research with a greater number of participant responses would provide a more comprehensive understanding by identifying more online platforms, apps, and specific websites and yield more detailed insights into the patterns and preferences of adolescents in this context, further identifying any differences between the urban and rural settings, and would also ensure that the sample is more representative of the broader population. With a greater number of participants, attention to gendered experiences using digital technologies for health, particularly around sensitive health topics, may also reveal nuanced vulnerabilities and coping strategies. To address these challenges, developing community-led interventions that center around cultural relevance, and adolescent agency may help build more inclusive and responsive digital health ecosystems, which involve an interconnected network of people, platforms, and policies that facilitate health communication and access through digital technologies.

The scarcity of region-specific studies underscores the importance of our contribution, offering preliminary insights into a population that remains underrepresented in digital health and youth engagement research. We advocate for future studies to expand the evidence base in this area, particularly those that explore culturally nuanced perspectives and age-specific experiences across Pacific Island communities.

Conclusion

This study contributes to the growing body of research on adolescent digital health practices by indicating that adolescents in Vanuatu engage with digital technologies, to access and share information on health-related topics. However, there exists a noticeable gap in research concerning their specific information needs and patterns of use, particularly within the Vanuatu context. Amongst the range of digital sources available to them, adolescents from both urban and rural locations in Vanuatu reported a preference for the use of social media, namely Facebook, TikTok and YouTube, as their primary means to access health information and discuss health issues. Since these platforms also display content that is not evidence-based and may be harmful to young people with inadequate health literacy, these initial findings are instrumental in informing future research shaping tailored initiatives and furthering our understanding of digital health trends among adolescents in Vanuatu. These findings also highlight the need to integrate digital health literacy resources into educational curricula, thereby contributing to the advancement of knowledge and skills within this population. Future research must explore cross-cultural comparisons of digital health behaviours among adolescents across Pacific Island nations, highlighting both shared challenges and opportunities for innovative health engagement strategies that are culturally grounded.

Ethics and consent

This study was a part of the European Family Farming, Lifestyle and Health in the Pacific (FALAH) project (n° 873185) (Fotsing & Galy, 2019). As such, Ethics approval for FALAH projects including fields of research in Fiji, New Caledonia, Solomon Islands, and Vanuatu was obtained from the Consultative Ethics Committee of New Caledonia (CCE 2018-06 001 and 2023-10 012). This study was conducted in accordance with the requirements of the Declaration of Helsinki (World Medical Association [WMA], 2024).

A participant information template was sent home with the students, providing parents information about the study, and an opportunity to opt-out of the study if they did not want their child to participate. If no signed note was returned, it was understood as consenting to involvement in the study. For parents who were living in remote, isolated islands and were unable to sign and return the forms due to illiteracy, we obtained verbal consent from community authorities (directors, teachers, and Kustom leaders). In research, consent is sought from both parents and adolescents for studies involving

vulnerable populations, including young people. However, in Vanuatu when parents are not available, such as in the case of students residing in boarding schools or living in remote islands, in line with local customs it is common practice that a representative of authority (for example a teacher, school director, or Kustom leader) can approve the ethical aspects of the study. The principals of the participating schools provided consent to involve their students in our study. In instances where written consent was not feasible, oral or verbal consent was accepted. The students whose parents did not opt them out of the study, had consent from community authorities, but did not want to participate, verbally expressed this to their teacher or a research team member and were free to leave the classroom without participating in the study. All adolescents provided individual written consent through the submission of the online survey.

Data availability

The data that support the findings of this study are openly available in Zenodo (open – Creative Commons Attribution 4.0 International – CC-BY 4.0). Exploring the Digital Health Landscape: How adolescents living in urban and rural Vanuatu use online platforms to access health information (anonymized version). DOI: 10.5281/zenodo.17154763 (https://zenodo.org/records/17154763) (Wattelez *et al.*, 2025)

Data are available under the terms of the Creative Commons Attribution 4.0 International

Restricted version of the data that support the findings of this study are available in Zenodo (restricted). Exploring the Digital Health Landscape: How adolescents living in urban and rural Vanuatu use online platforms to access health information (non-anonymized version). DOI: 10.5281/zenodo.14323390 (https://zenodo.org/records/14323390) (Wattelez *et al.*, 2024b)

For ethical reasons, the restricted data is not freely open because the data has not been anonymized. The risk of reidentification is not negligible. However, within reason, authenticated Zenodo users can request access to the data by contacting the authors through the Zenodo website, or by sending a direct email to dirlire@unc.nc. The authors will consider all serious requests. A basic condition to access to this dataset will be to certify that the requester complies with the European General Data Protection Regulation (GDPR) and the data will not be used to identify individuals.

Data are available under the terms of the Creative Commons Attribution 4.0 International

Extended data

Appendix: Supplementary Tables (1–3) are available on Zenodo: https://doi.org/10.5281/zenodo.15074015

The full questionnaire is available on Zenodo.

English: https://doi.org/10.5281/zenodo.14031903 (Galy *et al.*, 2024a)

French: https://doi.org/10.5281/zenodo.14183635 (Galy *et al.*, 2024b)

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Open Peer Review

Current Peer Review Status: ✔ ✔ ? ✔

Version 3

Reviewer Report 21 November 2025

https://doi.org/10.21956/openreseurope.23428.r62762

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✔ **Nicola Bruno**
University of Modena and Reggio Emilia, Province of Reggio Emilia, Italy

I would advise being more cautionary; for example, in the Abstract > Background, I'd say "preliminary study."
In Abstract > Results, I'd point out that the number of participants is low; to confirm the findings, research with more participants should be conducted.
In Abstract > Conclusions, I'd say "our preliminary findings."

I advise inserting these changes also in the text of the article

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Media education, Information Literacy, Disinformation, Source evaluation, Fact-checking

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 17 November 2025

https://doi.org/10.21956/openreseurope.23428.r62760

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i do not have further comments. thanks

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: OHRQOL, dental public health, prosthetic dentistry, implant dentistry

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 27 October 2025

https://doi.org/10.21956/openreseurope.23428.r62763

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Kay Oddone
Charles Sturt University, Albury, New South Wales, Australia

I approve these changes.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Education, digital literacy, information literacy.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 2

Reviewer Report 17 October 2025

https://doi.org/10.21956/openreseurope.23157.r61846

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This study fills a significant research gap by examining the digital health information-seeking behaviors of adolescents in Vanuatu. The study's descriptive nature offers useful initial insights, but considerable methodological limitations hinder the generalizability and profundity of the findings.

Strengths
New contribution: Addresses a significant research deficiency in comprehending digital health engagement within Pacific Island contexts.
Comparison of two settings: Efforts to juxtapose urban and rural settings

Main Issues
1. Size and Representativeness of the Sample
As underlined by the authors, the overall sample (n=197) is limited and may not accurately reflect the larger adolescent population in Vanuatu.
The subgroup utilizing digital devices for health information is significantly small (24%, n=47), which severely restricts the generalizability of findings regarding digital health behaviors.
Recommendation: Either significantly enlarge the sample or rearticulate the study objectives to more explicitly recognize these limitations in the title and abstract.

2. Questionnaire Design: Major Problems
2.1 Typology of questions: The questionnaire goes straight to digital platform use without first asking about people's general health information. A preliminary question like "Where do you usually get health-related information?" with options like non-digital sources (TV, radio, family, friends, teachers, healthcare providers, influencers) would help explain why so few people are using digital tools.
In addition to usage, a question regarding trust would have been equally important: which sources are considered most trustworthy for health information?
2.2 Structure of the questions: Questions 2 and 3 ("For searching health information..." and "For discussing health topics...") are too similar, so people are likely to give the same answers to both. This design flaw makes it harder to understand the different ways people can use digital health.
2.3 Unexamined exposure phenomenon: The small number of teens who say they use digital media for health reasons (24%) probably doesn't include people who just passively see health content. The questionnaire must differentiate between:

- Actively looking for health information
- Passive exposure while doing other things (like listening to music or watching influencers' videos, which is what most people do with their devices)

Suggestion: Add questions like, "Do you come across health-related content online even when you're not looking for it?" If so, where?; "Do you ever come across influencers or content creators discussing health-related topics? If so, where have you encountered them? Do you trust them?"; "Which sources do you consider most trustworthy for health information?"

3. Claims in the discussion that don't have any evidence to back them up
Some parts of the discussion make claims about the Vanuatu context without backing them up with data from this study:
- The "Policy and Education" section suggests adding digital literacy to school lessons, but the study didn't look at how well students can evaluate online information, how confident they are in doing so, or what health resources are already available in schools.
- The "Misinformation" section goes into great detail about the dangers of unregulated social

media and how teens aren't very good at telling which sources are reliable, but there were no questions that asked students about their own experiences with conflicting or unreliable health information.

Suggestion: Either include a short follow-up study to confirm these discussion points or clearly label these sections as "implications from the literature" instead of "interpretations of the current findings." Or, say these directly as hypotheses that need to be tested in the future.

4. Introduction
The justification for the specific selection of Vanuatu should be better developed. The authors acknowledge the scarcity of research, which is applicable to numerous Pacific Island nations.
Advice: Give specific reasons why Vanuatu is especially important in this context (for example, its linguistic diversity, its unique digital infrastructure problems, its unique cultural health practices, etc.).

5. Discussion
Several discussion sections offer literature reviews that lack a definitive link to the study findings:
"Policy and Education" part: Discusses the role of schools and digital literacy programs but presents no empirical data from this study about
Sections on "Misinformation" and "Exposure": These discussions are mostly theoretical and don't have any survey data to back them up in the Vanuatu context, even though they are important in theory.

6. References
The Introduction asserts that "adolescents worldwide increasingly engage with online platforms," referencing Gray et al. (2005) and Skinner et al. (2003). Because social media and digital platforms have changed so much in the last 20 years, these citations should be backed up with more recent evidence (after 2018).

More Ideas
- Comparative framing: Since there isn't much research on the Pacific Islands, you might want to think of this as the first in a series of cross-cultural comparisons. Clearly articulate the necessity for analogous studies in other Pacific nations to discern region-wide patterns as opposed to country-specific phenomena.
- Qualitative depth: Since few participants gave reasons for their platform choices, think about whether follow-up interviews or focus groups could help you understand the "why" behind those choices better.

Final remark
This study makes a valuable contribution by providing visibility to an underrepresented region and addressing a genuine research gap. Data from Vanuatu adolescents' digital health behaviors is important and deserves publication. However, a substantial revision to the manuscript's framing and discussion of findings is necessary.

The study should be explicitly positioned as exploratory and hypothesis-generating—the first step in understanding this population—rather than as providing definitive evidence for policy recommendations. Given the small sample and particularly the very small subgroup engaging with digital health tools (24%, n=47), conclusions about digital literacy education, misinformation

risks, and policy interventions are premature.

Recommended approach:
- Reframe the study explicitly as preliminary/exploratory work that establishes baseline patterns and identifies questions for future research
- Present this as the first in a series of investigations that will require larger, more representative samples; Follow-up qualitative studies to understand the "why" behind the patterns
- Avoid prescriptive recommendations (e.g., integrating digital literacy into curricula) without empirical support from this study

The data collected is valuable precisely because it highlights how little we know about this population. The authors should embrace this as groundwork rather than overextending their conclusions.

Is the work clearly and accurately presented and does it engage with the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

Are all the source data and materials underlying the results available?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Media education, Information Literacy, Disinformation, Source evaluation, Fact-checking

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 08 October 2025

https://doi.org/10.21956/openreseurope.23157.r61116

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I accept the revised version including description of limitations in the discussion. However, conclusions need revision again. As an example, the first sentence in the conclusions is adolescents are prominent users of infor....however, to get it as a conclusion, there should be another study to compare them with other age groups. therefore, it cannot be used in conclusion. further, ' it is important for researchers, health care...' sentence is a recommendation or future use, not a conclusion too. therefore, improvement of conclusion with use of ' only the ' highlights in the study would be appropriate.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: OHRQOL, dental public health, prosthetic dentistry, implant dentistry

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 15 Oct 2025

Krestina Amon

We thank the reviewer for considering our changes and the additional feedback regarding our Conclusion section. We have now reframed the wording of our Conclusion to focus more on our results, which then opens to future research.

The intention of our sentence, “Adolescents are prominent users of information promoted through digital technology” was to reflect the growing visibility of adolescents in digital spaces, particularly in relation to health information, as observed in our study. To avoid overgeneralisation, we have revised the sentence to more accurately reflect our findings (and those of the research cited in the Introduction to support it).

Regarding the feedback of our sentence, “With a multitude of information sources available to them, it is important for researchers, healthcare providers, and educators to gain insight into how adolescents in Vanuatu use online technology to fulfill their health information needs”, this sentence was intended to contextualise the relevance of our study and highlight the rationale behind our research focus, rather than to serve as a recommendation for future action.

However, we understand that you have read it as a forward-looking statement. To address this, we have revised the sentence to better reflect its role in summarising the significance of our findings. However, we believe it is justified to keep our future exploration recommendations as our final sentence in the Conclusion in addition to our key findings, as this was discussed and common in the Conclusion section of research papers published.

Competing Interests: No competing interests were disclosed.

Version 1

Reviewer Report 05 September 2025

https://doi.org/10.21956/openreseurope.21277.r58191

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The study examined how adolescents in Vanuatu use online platforms for health-related purposes. The survey of 197 students (urban and rural) revealed that 77% owned mobile phones, mainly for music and games. Only 24% used apps, social media, or websites for health, with Facebook, TikTok, YouTube, Instagram, and Twitter as main sources. Urban students preferred search engines, while rural students relied more on social media for health information. The findings challenge the digital divide narrative, emphasizing cultural sensitivity, misinformation risks, and the importance of policy and education in digital health engagement.

The authors have made a valuable contribution by focusing on how youth utilize social media for healthcare information. However, I recommend strengthening the discussion section with supporting literature to substantiate the findings.

In particular, it would be useful to further explain why the youth participants were not actively engaging with social media for healthcare information. Could this be attributed to their age, where critical health conditions are less prevalent, or perhaps to a general perception of invulnerability at this stage of life? Alternatively, could their priorities as students, such as education and social or entertainment-oriented activities limit their interest in health-related content? Clarifying these points would add depth to the interpretation of results.

Additionally, it would be helpful to elaborate on the differences observed across the platforms or

systems used for accessing health information, as this may provide further insights into patterns of engagement.

I also encourage the authors to provide updated references. Specifically, the citation to Freeman et al. (2018) should be replaced with a current source. Similarly, in the statement beginning with *"This aligns with current literature that adolescents..."*, please support your claim with current literature. In this regard, you may consider replacing works such as Moreno et al. (2018) and Yonker et al. (2015) with current studies to strengthen the discussion.

Is the work clearly and accurately presented and does it engage with the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

Are all the source data and materials underlying the results available?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
No

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: My research focuses on social media use in healthcare, digital healthcare management systems, and telemedicine, with particular interest in how online platforms shape health communication, patient engagement, and access to care.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 12 Sep 2025

Krestina Amon

Discussion We thank the reviewer for their positive feedback about the valuable addition of our findings in this space, and for their suggestions to improve our Discussion. To ensure that our arguments are based on our results, we have used our findings of the popular activities conducted by our participants as a potential reason for the limited engagement with social media for health information and supported with recent literature to provide greater depth to our interpretation of the results. We have also expanded our discussion to

elaborate on the differences observed across the platforms and devices used for accessing health information. This includes discussing mobile phones, tablets and social media platform use supported by recent research literature. These additions help to clarify patterns of engagement and provide insight into how young people navigate digital health resources. **References** We have updated the manuscript accordingly to include more recent papers (including Armstrong et al., 2021; Black Dog Institute, 2024; Gazibara et al., 2024; Rich et al., 2020) and updated the text to align with the updated research papers cited.

Competing Interests: No competing interests were disclosed.

Reviewer Report 20 August 2025

https://doi.org/10.21956/openreseurope.21277.r55609

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Results presentation is very poor. Total study is descriptive, does not add a big value to the literature. The results should have been analysed according to the independent variables such as age, gender, other socioeconomic factors...etc...
Discussion poorly written too more comparison and discussion on available literature should have been used for the discussion. you could get some guidance from : https://doi.org/10.1186/s12889-024-19008-5. Conclusions could have been improved if analysis was done. suggest major revision

References

1. Jayasinghe Y, Kanmodi K, Jayasinghe R, Jayasinghe R: Assessment of patterns and related factors in using social media platforms to access health and oral health information among Sri Lankan adults, with special emphasis on promoting oral health awareness. *BMC Public Health*. 2024; **24** (1). Publisher Full Text

Is the work clearly and accurately presented and does it engage with the current literature?
No

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

Are all the source data and materials underlying the results available?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
No

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: OHRQOL, dental public health, prosthetic dentistry, implant dentistry

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 12 Sep 2025

Krestina Amon

Results We appreciate the reviewer's suggestion to include further analysis of independent variables. While we agree that a stratified analysis can offer additional insights, our study was designed as an exploratory, descriptive investigation into adolescents' use of online platforms for health information in Vanuatu. Given the limited number of participants who reported using digital tools for health purposes (n= 47; 24%), further disaggregation by age, gender, or socioeconomic status would not yield statistically meaningful results and could risk overinterpretation. We have clarified the scope and limitations of our descriptive approach in the Methods and Discussion sections, emphasising the value of this data in a context where little prior research exists. In addition, we have included subheadings to clearly present the findings as aligned with the research questions, as suggested by Reviewer 1 to provide a better structure to present the results. We believe, along with positive comments about our topic by Reviewers 1 and 3, that our study contributes meaningfully. It highlights digital health engagement patterns in an underrepresented population and identifies culturally specific factors that influence online health-seeking behaviour. **Discussion** We have reviewed the study suggested, which was published by the reviewer and colleagues on social media use for health and oral health information in Sri Lanka. It offers interesting insights into patterns of digital health engagement in a culturally and socioeconomically diverse context for those over 18 years of age. We developed our discussion based on the emerging themes from our results and incorporated relevant literature where available. However, we found that existing research on younger adolescents under 18 years in Pacific Island contexts is scarce, which limited our ability to draw on region-specific frameworks, but we drew on comparisons to the literature relating to the discussion topics where we could. We had added additional research citations based

on suggestions from Reviewer 1. We believe our study contributes valuable insights and highlights the need for further research in this underrepresented region and age group and as such, have emphasised the importance of our study as a foundational contribution to this underexplored area in the Discussion. **Conclusion** We appreciate the reviewer's recommendation to strengthen the conclusions through additional analysis. As noted earlier, our study was designed as a descriptive exploration of adolescents' use of online platforms for health information in Vanuatu. Given the limited number of respondents who reported engaging with digital health tools (24%), we chose not to pursue inferential statistical analysis, as it would not yield reliable or generalisable results. Instead, we have revised the paper to better reflect the descriptive nature of the study while emphasising its contribution as foundational research in a context where digital health engagement among young adolescents in Vanuatu remains underexplored. We clearly articulate the implications for future research, policy development, and culturally sensitive health education strategies in Vanuatu and similar settings.

Competing Interests: No competing interests were disclosed.

Reviewer Report 02 July 2025

https://doi.org/10.21956/openreseurope.21277.r54821

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Title and Abstract
The title has some alignment with the scope of the research, however the focus on social media is somewhat misleading, as the paper actually explores many different aspects of adolescents' engagement with digital information, with particular attention to digital health information. The abstract presents the aim, methods, key results, and conclusions clearly and concisely. It reflects the paper's content and signals its relevance to adolescent digital health literacy.

Introduction and Literature Review
The introduction sets the context but contains several unsupported claims. For example, statements on adolescents' media use, links between usage patterns and educational initiatives, and disparities in urban digital access require citations. Core terms such as *digital health landscape*, *health information-seeking behaviours*, and *digital health literacy* appear without definition. Defining these terms and grounding assertions in current scholarship will strengthen the argument and establish conceptual clarity. To do so, I recommend consulting paper such as

1. Merga, M. K. (2024). - **Ref 1.**

2. Taba, M., et.al. (2022). **Ref 2**

3. Oddone, K., & Merga, M. (2025)- **Ref 3**.

In addition, the introduction would be improved by clear presentation of the research questions as a series of dot points rather than embedded within the text. This would help the reader make stronger and more immediate connections with the title of the paper as well as with the sections of the findings, as the wording of the questions could be more easily identified within the findings being reported.

Methodology

The research design is appropriate, yet important details are missing. Specify student age ranges in addition to grade levels to aid international readers. It would be useful to describe any teacher training provided to minimise survey administration bias. This is particularly important given the context of the research, where students may be relying on teachers to aid their understanding, and teachers may not be familiar with the importance of unbiased guidance. Also please consider including the full survey as an appendix to enable replication. These additions will enhance rigour and transparency.

Findings and Discussion

The presentation of findings would benefit from greater clarity and precision, particularly in the use of the term's *social media* and *platform*. For instance, when discussing the responses to the survey question, “Which social media platform/site is your favourite?” identifying that a high number of responses were “social media,” is not helpful as the phrasing of the question likely prompted respondents to remain within the bounds of the term provided. The more relevant reporting was concerning the responses identifying specific platforms, which offer more meaningful insights into participants’ actual engagement behaviours. Refinement of the representation of the findings in this way would improve the impact of the study for readers. Consider using subheadings rather than bolded text through the findings to aid comprehension and relation of the findings to the original research questions. Also consider listing the results using dot points to aid perusal of the findings.

The discussion integrates results with prior work and offers practical advice to improve adolescents’ digital health literacy. It would benefit from explicit links back to each research question and deeper reflection on how risks including misinformation and passive exposure could be mitigated. It is also not evident why Cultural sensitivity is not considered a ‘risk’ and grouped with the other concerns.

The limitations and future research directions mainly discuss limitations, without offering directions for future research and possible strategies to address the low response rate. Consider elaborating on this section to demonstrate where and how this research will be expanded, as the findings indicate there is more work to be done in this area.

Conclusion

The conclusion summarises the study but could tie findings more explicitly to the defined concepts and broader educational implications. It is also concerning that a major conclusion is that there is a preference for social media use, when some questions only offered social media platforms as options to choose for their favourite information source. Perhaps the conclusion should be narrowed to the specific platforms students used, or the preference for mobile phone over other devices. A brief restatement of contributions and recommended next steps would improve coherence.

Overall Strengths

- Clear, concise abstract
- Well-motivated research topic
- Practical focus on improving adolescent digital health literacy

Areas for Improvement

- Provide references for all key claims in the introduction.
- Define *digital health landscape*, *health information-seeking behaviours*, and *digital health literacy* early.
- Add age ranges, teacher training details, and the survey instrument to the methods section.
- Strengthen the discussion by connecting findings to research questions and suggesting future studies.

Recommendation

Minor revisions – The study addresses an important issue and uses a suitable design, but it needs additional references, clearer definitions, and fuller methodological detail before indexing.

References

1. Merga M: TikTok and digital health literacy: A systematic review. *IFLA Journal*. 2025; **51** (2): 490-501 Publisher Full Text
2. Taba M, Allen T, Caldwell P, Skinner S, et al.: Adolescents' self-efficacy and digital health literacy: a cross-sectional mixed methods study. *BMC Public Health*. 2022; **22** (1). Publisher Full Text
3. Oddone K, Merga M: Evaluation Strategies of School Students Accessing Health Information in Social Media Videos: A Case Study Investigation. *Journal of Library Administration*. 2025; **65** (2): 214-234 Publisher Full Text

Is the work clearly and accurately presented and does it engage with the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

Are all the source data and materials underlying the results available?

No

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Education, digital literacy, information literacy.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 12 Sep 2025

Krestina Amon

Title and abstract We thank the reviewer for their comments about the title. The title has been amended to state the use of online platforms, rather than single out social media specifically. **Introduction and Literature Review** We have had a closer look at the Introduction and believe that the claims in the first paragraph about adolescents' use of social media are all currently supported with citations from Hausmann et al., 2017; Moreno et al., 2018; Gray et al., 2005; Skinner et al., 2003.

For clarity, the existing Caillaud et al., (2022) citation is the evidence to support the claim of "adolescents engage and respond well to tailored digital education programs targeting health-related behaviour such as physical activity in Australia..." and the Galy et al., (2019) citation for the research on this in the Pacific Islands. Furthermore, the existing Nedjar-Guerre et al., (2023) citation is the research evidence to support the claim of disparities in urban digital access.

We appreciate the reviewer's suggestion regarding defining the term "digital health landscape." This term has been widely used in existing literature without a standardised definition, often serving as a broad conceptual umbrella encompassing the use of digital technologies and systems influencing information delivery, access, and innovation. However, to improve clarity for readers less familiar with this terminology, we have now included further description within our sentence.

While we recognise the importance of conceptual clarity relating to defining "information-seeking behaviours", we've opted not to include a formal definition of information-seeking behaviours as we believe the term is self-explanatory, and often used, as well as well-established in the literature and generally understood within the context of engagement. The discussion throughout the manuscript implicitly defines and illustrates the concept through examples of online searches, social media interactions, and peer-to-peer information exchange. We have however, amended the sentence so that the references cited for this is made more explicit that these papers discuss adolescent information-seeking behaviours.

In the original manuscript, a definition of digital health literacy "represents the capacity to proficiently navigate health-related information and resources within digital environments" is already provided and is supported with a citation from Schulenkorf et al. (2021). We have reviewed the definition in the reviewer's published paper as suggested, and believe that the definition we have provided is aligned. We have updated this to include a citation of the reviewer's work for our definition.

The Taba et al., (2022) paper that the reviewer suggested was already cited in the same

paragraph relating to digital health literacy.

The paper by the reviewer's colleague, Merga (2025), was useful and has been included in the Discussion section of the paper, relating to risks.

The new suggested citations of the reviewer's work and colleague have been included in the reference list of the updated version of the paper.

As suggested by the reviewer, we have updated the presentation of our research questions in point form in version 2 of the paper. **Methodology** In the updated version of the paper, we have included i) the age range of the participants (ie. 14-20 years of age) in the Results section, and ii) a description of instructions to the teachers (ie. "To minimise bias in the administration of the questionnaire, the teachers were instructed that they were allowed to provide definitions of any words within the questionnaire that the participant may not have understood, but were asked not to provide any examples that may suggest answers to the questions"), in the Methods section.

As required by the Journal, the questionnaire questions have already been provided in the data availability section and cited (Galy et al., 2024a; Galy et al., 2024b). **Findings and Discussion** We understand the concern raised by the reviewer and have modified the description of the Results in version 2 of the paper to better present the findings. We have also updated each of the Figures to better present the social media platforms identified by the participants. And included a Supplementary Table to clearly present the analysis of responses. To further provide links with the research questions, we have included subheadings to more clearly present the findings as aligned with the research questions.

Within the Discussion section, to provide more details on the risks we have identified, we have included the work of your colleague, Merga (2024) and the work of the reviewer (Oddone & Merga, 2025) to provide more details on how the risk of misinformation and exposure could be mitigated. Regarding the reviewer's observation regarding cultural factors and their relation to risk in adolescent social media use for health purposes, in our paper we conceptualise cultural sensitivity as a contextual and structural consideration, rather than as a discrete risk factor. While cultural dynamics can amplify or mitigate digital health risks—such as exposure to misinformation or stigma—we have framed culture as a cross-cutting influence that informs adolescent engagement and the effectiveness of health communication strategies. Therefore, rather than positioning culture as a risk in itself, our approach emphasises its role in shaping digital health literacy, access, and relevance. We hope this framing provides a more holistic understanding and avoids reinforcing deficit-based interpretations of cultural identity. After review of the Limitations and Future Research Directions section, we agree that we lacked suggestions for future research. We have updated this with suggestions on moving forward. **Conclusion** Based on reviewer feedback we have amended the Conclusion section to include what our study contributes to, providing more specific identification of social media platforms from our results, and a final statement of further research on this topic.

Competing Interests: No competing interests were disclosed.