





Original research

Youth social innovation during the COVID-19 pandemic in the Philippines: a quantitative and qualitative descriptive analyses from a crowdsourcing open call and online hackathon

Allan Ulitin ¹, Jana Deborah Mier-Alpaño ², Meredith Labarda,³ Noel Juban,⁴ Abigail Ruth Mier,² Joseph D Tucker ⁵, Weiming Tang,⁶ Mallika Auplish,⁷ Po-lin Chan⁷

For numbered affiliations see end of article.

Correspondence to

Allan Ulitin, University of the Philippines Manila, Manila, Philippines; arulitin@up.edu.ph

NJ since deceased.

Received 5 November 2021
Accepted 9 April 2022
Published Online First
20 May 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Ulitin A, Mier-Alpaño JD, Labarda M, et al. *BMJ Innov* 2022;**8**:161–168.

ABSTRACT

Introduction Young people have played a pivotal role as part of the COVID-19 response, including developing health messages and social innovations. Social innovation in health engages multiple stakeholders in linking social change and health improvement. The study examined the feasibility of youth ideas and innovations to address the impacts of the COVID-19 pandemic using quantitative and qualitative descriptive analyses.

Methods In partnership with the WHO, academic institutions, youth organisations and civil society groups, we conducted a crowdsourcing open call among Filipino youth (15–30 years old) using a structured Special Programme for Research and Training in Tropical Diseases/Social Innovation in Health Initiative process. The open call had three categories: *youth voices to cocreate the post-COVID-19 world* (entries were texts, images, videos and music), *youth-led COVID-19 social innovations*, and *youth-led social innovations not related to COVID-19*. Each submission was evaluated by three independent judges. Finalists were selected in each of the categories alongside four grand winners. All finalists were invited to attend a 1 day online civic hackathon.

Results We received a total of 113 entries (*youth voices to cocreate the post-COVID world*=76; *youth-led COVID-19 social innovations*=17; *youth-led social innovations not related to COVID-19*=20). Twelve entries focused on youth mental health during the pandemic. The

online hackathon provided the participants mentorship for further development of their ideas. Finalists were able to produce draft health communication campaigns and improved social innovations.

Conclusion Many Filipino youth created exceptional entries in response to the open call. This suggests the feasibility of including youth voices in strategic planning processes. A global youth social innovation call is recommended.

INTRODUCTION

COVID-19 responses have been mostly expert driven by central authorities, limiting the extent to which youth have been engaged. The pandemic has had a profound impact on youth health, especially mental health.^{1,2} The shared experience of the pandemic has also highlighted ways that youth can be active agents of change through social innovation.^{3–5} Social innovation can be defined as a solution—a process, product, practice or market mechanism—developed by a range of actors in response to health challenges within a geographic context.⁶ One way to identify social innovations is through crowdsourcing open calls.

Crowdsourcing open calls are novel approach to identify and solicit community-based solutions. Through crowdsourcing, actors work together to come up with solutions to identified

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ The current COVID-19 response limits the extent to which youth have been engaged to address health challenges during the pandemic especially in low-income and middle-income countries (LMICs) including the Philippines.
- ⇒ The COVID-19 pandemic has had a profound impact on youth, especially on their health in which this shared experience also highlighted the ways where they can be active agents of change to address these health needs and challenges through social innovation.

WHAT THIS STUDY ADDS

- ⇒ The Social Innovation in Health Initiative Philippines, in partnership with Social Entrepreneurship to Spur Health, Asian Medical Students Association Philippines and other youth organisations and the World Health Organization-Western Pacific Regional Office conducted a crowdsourcing open call and online civic hackathon to gather Filipino youth's ideas about the future postpandemic and to come up with innovative solutions to identified health needs during the pandemic.
- ⇒ Filipino youth's ideas about the future provided insights into the present experience of the youth during the pandemic and presented imagined life postpandemic highlighting advancements in technology and issues relating to work, family, education, social interactions and environment. The youth open call received commendable ongoing and proposed social innovation entries that address a wide range of emerging health problems during the COVID-19 pandemic, with several tackling mental health.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE AND/OR POLICY

- ⇒ Bringing in youth voices to inform programmes and policies is imperative. Crowdsourcing open calls and online civic hackathons to solicit youth input could be useful tools to respond to health emergency needs in LMIC settings.
- ⇒ Exceptional innovation entries open space for implementation research to assess their quality and impact on improving specific health and development outcomes.

health needs.⁷ Crowdsourcing has been widely used in public health and medical research,⁸ such as in identifying approaches to manage infectious diseases.^{9 10} In addition, crowdsourcing may help recognise innovative solutions that are actionable, quick, and low cost for health and economic challenges brought by the pandemic.^{11 12} Crowdsourcing may be done through a hackathon, an event that convenes actors with varied expertise during a brief period to solve a problem.⁷ For the purpose of our activity, we adapted an online civic hackathon to be an opportunity for the youth to develop civic and innovative solutions for problems in their communities.¹³

Online hackathons are emerging approach within the space of health innovations to help generate

solutions in response to COVID-19. These activities promote inclusive participation, cross-regional collaboration and rapid multisectoral partnership and may be less expensive.¹³ Since the onset of the pandemic, online hackathons have helped to organise community responses to COVID-19 and identify compelling innovations.^{14 15}

While youth who are directly and indirectly affected by the pandemic are particularly well suited to cocreate COVID-19 solutions, current published literature has paid little attention to youth voices and perspectives to address the health priorities brought by the pandemic.¹⁶ This holds true among low-income and middle-income countries (LMICs) including the Philippines, where responses to the pandemic were organised primarily by central authorities.¹⁷

At present, there is limited available literature exploring the needs of Filipino youth in various aspects of their lives during the pandemic, as well as participatory events such as hackathons that are organised particularly for them. Moreover, existing open call and hackathon initiatives paid far too little attention to youth-initiated non-digital solutions and health innovations that adapted a systems approach (ie, impact of economy, future of work and technology on health).¹⁸ This led us to conduct an open call and online civic hackathon to solicit: (A) youth ideas about how they foresee the future after the COVID-19 pandemic, (B) youth-led social innovation projects to address health needs brought by the COVID-19 pandemic in local communities and (C) social innovation projects implemented during the time of pandemic to address non-COVID-19 related health needs.

METHODS

We used the WHO/TDR (Special Programme for Research and Training in Tropical Diseases)/Social Innovation in Health Initiative (SIHI)/Social Entrepreneurship to Spur Health (SESH) practical guide on crowdsourcing in health research⁷ that provides the steps on organising a crowdsourcing contest. In the Philippine context where many young people are present both in school and out-of-school communities, we involved key government agencies including the Department of Education, Commission on Higher Education, *Sangguniang Kabataan* (*Sangguniang Kabataan* is a council meant to represent the youth in each barangay or village in the Philippines), community-based arts youth groups, indigenous peoples' groups and faith-based organisations in consultation and cocreation process, and promotional activities to ensure that our open call reaches across youth groups of different socioeconomic status. We used social media and email to promote and collect entries, drawing on a snowball referral method.

Our open call aimed to ideate solutions among the youth. It also sought to stimulate youth's thinking about the future, the problems that may arise and

ideating solutions based on these, thereby skilling youth in futures literacy and enabling thinking and response mechanisms to resolve projected issues.

Open call

The SIHI Philippines Hub, in partnership with Social Entrepreneurship to Spur Health, Asian Medical Students Association Philippines and other youth organisations, with the support of the World Health Organization-Western Pacific Regional Office conducted an open call for the Filipino youth. The purpose of the open call was to generate youth ideas about the future and collect youth-led social innovations related to the COVID-19 pandemic.

Filipino youth (ages 15–30) were invited to submit entries to any of the following categories: (A) *youth voices to cocreate the post-COVID-19 world* (youth ideas): future-oriented ideas on the problems or concerns that would emerge in youth lives out of the pandemic (eg, in work, education, family and health); entries could be texts, images, videos and music; (B) *youth-led COVID-19 social innovations*: youth-led social innovations implemented to address problems or challenges brought by COVID-19 in a given community; entries could be innovations that address either direct or indirect COVID-19 health problems; and (C) *youth-led social innovations not related to COVID-19*: non-COVID-19 related youth-led innovations that address other health problems or challenges not related to COVID-19. The open call was promoted starting 14 October 2020 and accepted submissions from 4 November to 18 December 2020.

Steering committee

To facilitate the implementation of the open call, we organised a steering committee composed of representatives from multiple sectors and fields including medicine, public health, health service delivery, youth development, social and behavioural science, social entrepreneurship, social development, and futures thinking and literacy. They were involved in the conceptualisation and design of the open call through consultations and cocreation process. Regular consultation meetings were conducted to monitor progress of the open call.

Promotion of the open call

We used digital platforms such as Facebook and Twitter to promote the open call. Promotional materials were also posted on SIHI's official website. Facebook was mainly used as it is the most popular social media platform in the Philippines. We used paid promotion to enhance youth engagement across the country. We also reached out to different youth organisations and advocate groups to promote the open call through their social media accounts and networks. Most publicity materials were posted on Thursday and Friday nights to maximise youth engagement based on

increased online activity during those periods. Steering committee members and partner organisations also shared the publicity materials on their social media accounts. The Facebook's insights tool tallied a total of 332 931 post reach, which represent the number of people who saw our posted materials,¹⁹ 13 331 total engagements (reactions, comments and shares) and 30 189 post clicks (photo views, website link clicks, profile name clicks, 'see more' clicks).

Selection of entries

Each entry was evaluated by three independent judges. The entries were distributed for evaluation to a total of 27 judges, a collective of health professionals, academics, social innovation champions, youth leaders and other key partners in health and social innovations. For the youth ideas category, entries were assessed to ensure these included a clear description to reimagine a collective future postpandemic and an innovative idea about the future expressed in a compelling way. All youth-led innovation entries were evaluated based on the degree of innovativeness, feasibility, inclusiveness, effectiveness and potential to inform policies and programmes. Grand winners of two innovation categories received seed money for implementation activities of their novel solutions.

Online youth civic hackathon

Part of the incentives for the open call finalists was participation in a 1 day online civic hackathon. Due to COVID-19 restrictions preventing face-to-face events, the hackathon was conducted online. It had the following specific objectives: (A) highlight the Filipino youth situation, perspectives, and experiences during the pandemic; (B) provide mentorship for research, ideation and further development of the finalists' innovative ideas; and (C) provide a platform for networking among the participants. It was designed to consist of three major segments: capacity building of participants through plenary talks by local experts, mentoring sessions by volunteer mentors and pitching of final outputs.

Data analysis

The general profile of the respondents who filled out the participant's information form were presented as summary statistics on gender, age, employment, education and geographical location. The emerging themes of the open call entries across three categories were also summarised. Two authors (AU and JDM-A) separately examined all the submissions. They independently identify the themes of the entries by determining the concerns or issues addressed by the submitted ideas and innovations. Individual findings were presented and consulted to the rest of the team for consensus. Statistical analysis of quantitative data and textual analysis of qualitative data were performed using Excel (Office 365, Microsoft).

Table 1 Sociodemographic characteristics of youth open call participants (n=45)

Variable		Count, n (%)
Gender	Man	24 (54)
	Woman	19 (42)
	Another gender	1 (2)
	Prefer not to say	1 (2)
Age (years)	15–17	11 (24)
	18–23	21 (47)
	24–29	10 (22)
	≥30	3 (7)
Employment	Student	38 (84)
	Nonstudent/professional	7 (16)
Employment status/ year level in school	High school	2 (4)
	Senior high school	18 (40)
	College	11 (25)
	Graduate school	9 (20)
	Nonstudent/professional	5 (11)
	Major island group	Luzon
	Visayas	9 (20)
	Mindanao	9 (20)

Patient and public involvement

No patient involved.

RESULTS**Open call**

The open call received a total of 113 entries from a total of 71 individual participants and 22 groups. Among the 45 participants who provided their personal information along with their submitted entries, 24 identified themselves as men, 21 identified as women. Most of these participants belonged to the age bracket 18–23 years (21), were students (28) and were from the Luzon island group (27). The general profile of the participants is summarised in [table 1](#). An overview of the received entries is presented in [table 2](#).

After the evaluation process, a total of 15 entries with the highest mean scores in their respective categories were selected as finalists. Distribution of mean scores is presented in [figure 1](#). Six finalists were selected for the category *youth voices to cocreate the post-COVID-19 world*: text entries. Three finalists each were selected for the categories *youth voices to cocreate the post-COVID-19 world*: non-text entries, *youth-led COVID-19 social innovations* and *youth-led social innovations not related to COVID-19*. One grand winner was then chosen for each category. Top-ranked entries to the open call are presented in [table 3](#).

Youth voices to cocreate the post-COVID-19 world

There were eight emerging themes from the 76 entries on ideas about the future postpandemic as summarised in [table 2](#). Framing the entries through the lens of strategic planning, some of them provided insights into

Table 2 Overview of entries to the open call

Youth voices to cocreate the post-COVID-19 world		
Category	Type	Count
Youth ideas (text)	Poem	8
	Story	17
	Essay	28
	Screenplay	1
	Total	76
Youth ideas (non-text)	Image	19
	Video	2
	Music	1
	Total	76
	Themes (youth ideas)	
Technological advancement		20
Social issues in general		14
Resiliency amidst the pandemic		14
Youth empowerment		7
Physical health and well-being		6
Future of education		6
Environmental issues		6
Mental health		3
Total		76
Youth-led social innovations		
COVID-19 related social innovation	Ongoing	10
	Proposal	7
Other social innovation	Ongoing	9
	Proposal	11
Total		37
Theme/subject of innovations		
Physical health and well-being		9
Mental health		7
Environmental issues		6
Education		6
Health education		5
Healthcare delivery system		1
Health information management		1
Economic and social challenges		1
Social entrepreneurship		1
Total		37
Grand total		113

the present experience and plight of the youth during the pandemic. These entries either described the current situation, called for necessary actions, shared reflections from the pandemic experience or presented the status of the welfare of the youth. Other entries depicted the imagined life postpandemic highlighting advancements in technology and issues related to work, family, education, social interactions and environment.

Youth-led social innovations

There were nine emerging themes from the 37 innovation entries of which the majority addressed physical health and mental health. Innovation entries were further categorised into either implemented or proposed innovations as summarised in [table 2](#).

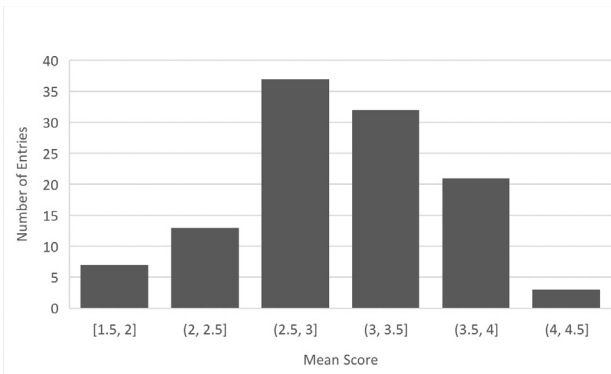


Figure 1 Histogram showing a distribution of mean scores of entries to the Philippine youth open call (n=113).

Online youth civic hackathon

Out of 31 invited finalists, 28 joined the hackathon, of which 16 were male and 12 were female. Mean age of the participants was 23 years old. Ten participants were from Luzon, 8 were from Visayas and 10 were from Mindanao.

Participants were given a presentation on design thinking and provided mentorship by volunteer mentors to improve their innovation entries and produce health communication campaigns.

Participants from *youth voices to cocreate the post-COVID-19 world* category were able to come up with draft health communication campaigns. Two groups identified mental health of adolescents and young adults amidst the pandemic as their health priority. One group focused on physical health and well-being of senior high school and college students, highlighting changes in lifestyle from attending online classes. Outputs were presented during plenary session. Feedback of mentors revolved around the following themes: evidence-based approach for the campaign; inclusiveness, uniqueness and innovativeness; incorporating solutions in the campaign; and strategies to expand reach of the campaign.

Participants from *youth-led social innovations* categories received advice from mentors for the improvement of their ongoing or proposed innovations. Mentors' feedbacks addressed the following key areas: general context of the innovations; technical specifications of innovation products; sustainability and marketability of innovations; and expansion of networks and building partnerships to scale-up innovations.

DISCUSSION

The youth open call and online civic hackathon that we organised demonstrated that these activities can be effective approaches to stimulate strategic planning for policymakers by engaging the youth. These methods are also helpful tools to solicit novel solutions to community health needs in the time of COVID-19. Our experience is consistent with other crowdsourcing and hackathon research.^{11 20} This extends the literature

by presenting how open calls and hackathons could be useful in responding to emergency health needs, focusing on youth voices and soliciting crowd input from an LMIC setting. Our experience on gathering ideas and solutions provides practical insight for future implementation.

From the pool of submitted entries and the creation of health communication campaigns during the online civic hackathon, mental health was identified as an important health concern among the youth participants. Three entries in youth ideas category, seven youth-led innovation entries and two health communication campaigns during the hackathon tackled mental health. The mental health challenges that were highlighted include isolation or lack of social interaction during the lockdown and increased cases of anxiety, depression, self-harm and suicide during the pandemic. Understandably, these challenges were followed by proposed solutions and innovations in some entries. Some examples of these include provision of spaces for constructive interaction among youth, venues or media for expression, enabling good coping skills through education, and guidance to deal with stress and anxiety. Limited literature is available about these interventions during the pandemic especially in LMIC settings.²¹ Furthermore, this observation affirms the findings of recent studies that identify COVID-19 pandemic as having significant impact on youth mental health.^{1 2 15 22–24} This also signifies that mental health is a concern that needs more serious attention of both research and policy sectors especially during COVID-19 pandemic.

One of the winning youth-led innovation entries, *This Book is so Boring*, is a creative social innovation developed by a local adolescent nurse. It is a printed personal journal that seeks to address mental health issues. The journal was initially focused on serving a local city population of one province, but its reach has expanded to surrounding cities and municipalities. In the first 10 months of implementation, a total of 700 hundred printed copies of the journal were distributed all over the province. The journal could be a useful resource for other sectors including educational institutions to promote mental health among the youth. This simple solution could be adapted for different settings and used in many resource-constrained contexts. This responds to the substantial gap in mental health interventions for youth²¹ and allows for services to reach members of the population with limited digital resources.

Youth and non-experts submitted several high-ranked entries to our open call. This is consistent with the hypothesis that crowds can generate wisdom to improve health outcomes.²⁵ Our open call has received commendable entries, with a mix of proposed and ongoing social innovations. These innovations address a wide range of health needs and challenges including those related and not related to COVID-19. The

Processes and systems

Table 3 Top-ranked entries to the open call

Youth voices to cocreate the post-COVID-19 world: text entries				
Type of entry	Title	Topic	Theme	Age of participant (s)
Screenplay	Project Planet	Technological advancements after the pandemic that focus on health, education, economic and work	Technological advancement	19
Story	Waking up to a Beautiful Tomorrow	Positive impacts of the pandemic	Social issues in general	23
Essay	Journey to a New World	Possible alternative arrangements in work, education and health	Social issues in general	15
Poem	<i>Inilata ng Imahinasyon</i>	Technological advancement after the pandemic	Technological advancement	20
Story	Dearest Tonton	Message of hope and encouragement amidst the pandemic	Youth empowerment	19
Story	Home 2050	Changes in ways of living after the pandemic	Resiliency amidst the pandemic	20
Youth voices to cocreate the post-COVID-19 world: other entries				
Type of entry	Title	Topic	Theme	Age of participant (s)
Image	Moving Towards Post-Pandemic World Advancing the SDG Agenda and Global Networks	Advancing Sustainable Development Goals (SDG) agenda and global networks	Social issues in general	18
Music	In 30 years	Envisioned changes in ways of living after the pandemic	Social issues in general	18
Video	Check Me App	Virtual clinic through a mobile application	Technological advancement	24
				24
				21
				26
COVID-19 related social innovations				
Type of entry	Title	Short description	Theme	Age of participant (s)
Ongoing social innovation	This book is so boring	A journal/book available to adolescents which encourages a reader to bring out their ideas and emotions to promote the importance of mental health	Mental health	30
				18
				24
Social innovation proposal	Stat – Your Virtual Clinic	A mobile app for monitoring COVID-19 cases	Physical health and well-being	17
Social innovation proposal	ABSCISA	Integration of Arduino-Based Smart Contactless Interface with Syndromic Surveillance and Alert System (ABSCISA) towards social innovation for fomite-mediated SARS-CoV-2 transmission mitigation	Physical health and well-being	16
				17
				16
Non-COVID-19 related social innovations				
Type of entry	Title	Short description	Theme	Age of participant (s)
Ongoing social innovation	Nurture Stream	A virtual hub where individuals celebrate togetherness for mental health and well-being	Mental health	27
				27
				32
Social innovation proposal	KATSA	Provision of entrepreneurial solution by creating a sustainable programme where women and young people in an NGO sponsored-community wins from poverty	Economic and social challenges	27
				30
				22
				27
				25
Ongoing social innovation	Project Tuklas (Tele dermatology, Unang Kilatis sa Leprosy Ating Simulan)	Youth-led initiative aiming to end leprosy	Physical health and well-being	28
				26
				30
				26

COVID-19 related innovations mainly focus on monitoring and prevention of cases. The non-COVID-19 related innovations target improving physical health and well-being of the target community members. Our open call, however, was not able to measure the health impacts of implemented social innovations and assess the key factors that may affect the feasibility of the proposed social innovations.

We recorded unique entries envisioning the future after the pandemic. These include screenplay that told a story about life with advanced technologies and literary works (eg, poems, stories and essays) that featured the future of life in various aspects. These entries suggest creative means of making the public more future-informed for strategic planning. The ideas of the youth about their present predicament and their envisioned life in the future create an overarching background on why they produced specific innovations. This process of ideation followed a futures thinking approach that allows one to identify emerging issues, and from these issues to 'negotiate uncertainties, articulate scenarios and develop a common vision of a desired future through wide participation'. To achieve the envisioned future, innovations will then be introduced. These steps would be essential for informed policies and strategies.²⁶

Due to practical constraints, our open call and online youth civic hackathon had several limitations. First, our open call only accepted entries that were submitted online due to COVID-19 restrictions. Second, as the platform for the online hackathon required steady internet connectivity, some participants from resource-limited areas were not able to attend the entire duration of the hackathon due to poor bandwidth. This was partially mitigated by paying for internet coverage, a parallel mobile phone text chat and extensive note taking. Acknowledging the fatigue that online events can cause, we organised the hackathon to be only a 1-day event. We understand that experiences from other open calls suggest that in-person activities can extend and enhance engagement.²⁷ Lastly, we have limited resources to track our received innovations particularly in terms of feasibility of implementation or roll-out. It is also beyond our scope to monitor the outcomes of the mentoring and seed money investments for the selected innovations.

Our data have applications for programmes and policies. We propose our findings to be incorporated into our ministry of health's programme on healthy schools and communities under their health promotion agenda.

Our youth open call and online youth civic hackathon have several implications both for research and practice. First, these events have allowed the youth to generate and cocreate ideas and solutions to emerging health problems during the COVID-19 pandemic. These identified solutions might contribute to the holistic approach to the COVID-19 pandemic response especially in LMIC setting where youth voices are missing in strategic planning

processes. Moreover, exceptional innovation entries open opportunities for implementation research to assess quality and impact on improving specific health and development outcomes. Finally, this experience suggests the need for a global youth open call to amplify youth voices in response to the pandemic.

CONCLUSION

We described the processes of an open call and online civic hackathon for Filipino youth that solicited ideas and solutions to emerging challenges brought by the COVID-19 pandemic. Promising entries offer novel solutions that may contribute to the national and regional COVID-19 response in LMIC settings. Youth ideas and innovations highlight the need for more research to understand further the youth perspectives on COVID-19 pandemic challenges and assess the impact and feasibility of the proposed solutions as we move forward to the post-COVID-19 world.

Author affiliations

¹Institute of Health Policy and Development Studies - National Institutes of Health, University of the Philippines Manila, Manila, Philippines

²University of the Philippines Manila, Manila, Philippines

³Department of Medicine, University of the Philippines Manila - School of Health Sciences, Palo, Leyte, Philippines

⁴Department of Clinical Epidemiology, University of the Philippines Manila, Manila, Philippines

⁵IGHID, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA

⁶University of North Carolina Project-China, Guangzhou, China

⁷World Health Organization-Regional Office for the Western Pacific, Manila, Philippines

Twitter Jana Deborah Mier-Alpaño @janadeborahmd and Joseph D Tucker @JosephTucker

Acknowledgements The crowdsourcing open call and online hackathon were made possible by generous funding from the World Health Organization Western Pacific Regional Office. The authors would like to thank Sucele Czarina Deacosta and Ma. Pamela Tagle for their expertise and roles in making the online hackathon possible. The authors would like to thank the finalists and participants of the crowdsourcing open call and online hackathon who submitted their entries to share their ideas and innovations to address the impact of the COVID-19 pandemic.

Contributors All authors took part in the conceptualisation of this work. AU collected the data. AU, JDM-A, JDT, ML and ARM analysed the results and drafted the manuscript. All authors reviewed and approved the manuscript for submission. AU, as guarantor, accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

Funding The Social Innovation in Health Initiative (SIHI) is funded by TDR, the Special Programme for Research and Training in Tropical Diseases cosponsored by UNICEF, UNDP, the World Bank and WHO. TDR receives additional funding from the Swedish International Development Cooperation Agency (Sida) to support SIHI.

Disclaimer The authors alone are responsible for the views expressed in this article, and they do not necessarily represent the decisions or policies of PAHO or TDR. In any reproduction of this article there should not be any suggestion that PAHO or TDR endorse any specific organisation services or products.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Allan Ulitin <http://orcid.org/0000-0003-4190-501X>

Jana Deborah Mier-Alpaño <http://orcid.org/0000-0003-4119-8300>

Joseph D Tucker <http://orcid.org/0000-0003-2804-1181>

REFERENCES

- Singh S, Roy D, Sinha K, *et al*. Impact of COVID-19 and lockdown on mental health of children and adolescents: a narrative review with recommendations. *Psychiatry Res* 2020;293:113429.
- Liang L, Ren H, Cao R, *et al*. The effect of COVID-19 on youth mental health. *Psychiatr Q* 2020;91:841–52.
- UNDP Philippines. Young Filipino innovators showcase their ideas for the future at the Youth Social Innovation Lab 2020 [Internet], 2021. Available: <https://www.ph.undp.org/content/philippines/en/home/presscenter/pressreleases/young-filipino-innovators-showcase-their-ideas-for-the-future-at.html>
- Youth Colab. Playing their part – Four ways in which our young social entrepreneurs responded to COVID-19 [Internet], 2020. Available: <https://www.youthcolab.org/post/playing-their-part-in-counteracting-the-pandemic-four-ways-in-which-our-young-social-entrepreneurs-ha>
- Care. Empowered girls lead the way to innovative and impactful solutions in the midst of COVID-19 [Internet], 2020. Available: <https://www.care-international.org/news/press-releases/empowered-girls-lead-the-way-to-innovative-and-impactful-solutions-in-the-midst-of-covid-19>
- TDR. What is social innovation in health [Internet], 2017. Available: <https://socialinnovationinhealth.org/about/what-is-social-innovation/>
- TDR. *Crowdsourcing in health and health research: a practical guide*. Geneva, Switzerland, 2018.
- Wang C, Han L, Stein G, *et al*. Crowdsourcing in health and medical research: a systematic review. *Infect Dis Poverty* 2020;9:8.
- Tucker JD, Meyers K, Best J, *et al*. The HepTestContest: a global innovation contest to identify approaches to hepatitis B and C testing. *BMC Infect Dis* 2017;17:701.
- Liu E, Iwelunmor J, Gabagaya G, *et al*. ‘When she rises, we all rise’: a crowdsourcing challenge to increase women’s participation in an infectious diseases research fellowship. *BMC Infect Dis* 2020;20.
- Vermicelli S, Cricelli L, Grimaldi M. How can crowdsourcing help tackle the COVID-19 pandemic? an explorative overview of innovative collaborative practices. *R&D Management* 2020.
- Kaul P, Garg PK. Crowdsourcing and global collaboration during COVID-19 pandemic: a silver lining. *J Surg Oncol* 2021;123:1204–5.
- Brennan J. Civic hackathons for youth [Internet], 2020. Available: <https://www.nationalcivicleague.org/ncr-article/civic-hackathons-for-youth/>
- Braune K, Rojas P-D, Hofferbert J, *et al*. Interdisciplinary online hackathons as an approach to combat the COVID-19 pandemic: case study. *J Med Internet Res* 2021;23:e25283.
- Ramadi KB, Nguyen FT. Rapid crowdsourced innovation for COVID-19 response and economic growth. *npj Digit. Med.* 2021;4:18.
- Renjan V, Fung DSS. Debate: COVID-19 to the under 19 – a Singapore school mental health response. *Child Adolesc Ment Health* 2020;25:260–2.
- Vallejo BM, Ong RAC. Policy responses and government science advice for the COVID 19 pandemic in the Philippines: January to April 2020. *Prog Disaster Sci* 2020;7:100115.
- Day S, Li C, Hlatshwako TG, *et al*. Assessment of a Crowdsourcing open call for approaches to university community engagement and strategic planning during COVID-19. *JAMA Netw Open* 2021;4:e2110090.
- Kite J, Grunseit A, Li V, *et al*. Generating engagement on the make healthy normal campaign Facebook page: analysis of Facebook analytics. *JMIR Public Health Surveill* 2019;5:e11132.
- Kpokiri EE, Chen E, Li J, *et al*. Social innovation for health research: development of the SIFHR checklist. *PLoS Med* 2021;18:e1003788.
- Boldt K, Coenen M, Movsisyan A, *et al*. Interventions to ameliorate the psychosocial effects of the COVID-19 pandemic on Children-A systematic review. *Int J Environ Res Public Health* 2021;18:2361.
- Gao J, Zheng P, Jia Y, *et al*. Mental health problems and social media exposure during COVID-19 outbreak. *PLoS One* 2020;15:e0231924.
- Guessoum SB, Lachal J, Radjack R, *et al*. Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry Res* 2020;291:113264.
- UNICEF. The impact of COVID-19 on the mental health of adolescents and youth [Internet], 2020. Available: <https://www.unicef.org/lac/en/impact-covid-19-mental-health-adolescents-and-youth>
- Tahlil KM, Obiezu-Umeh C, Gbajabiamila T, *et al*. A designation to co-create community-driven HIV self-testing services for Nigerian youth: findings from a participatory event. *BMC Infect Dis* 2021;21.
- ADB. Futures thinking in Asia and the Pacific, why Foresight matters for policy makers 2020.
- Iwelunmor J, Ezechi O, Obiezu-Umeh C, *et al*. The 4 youth by youth HIV self-testing crowdsourcing contest: a qualitative evaluation. *PLoS One* 2020;15:e0233698.