

RGC Ref. No.: UGC/FDS24/B03/20 _____ (please insert ref. above)
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**RESEARCH GRANTS COUNCIL
COMPETITIVE RESEARCH FUNDING SCHEMES FOR
THE LOCAL SELF-FINANCING DEGREE SECTOR**

FACULTY DEVELOPMENT SCHEME (FDS)

Completion Report
(for completed projects only)

<p><u>Submission Deadlines:</u></p> <ol style="list-style-type: none"> 1. Auditor's report with unspent balance, if any: within six months of the approved project completion date. 2. Completion report: within 12 months of the approved project completion date.
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Part A: The Project and Investigator(s)

1. Project Title

Motivating Seasonal Influenza Vaccination among College Students:

A Social Marketing Intervention Study

2. Investigator(s) and Academic Department(s) / Unit(s) Involved

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	Dr LEE, Suet-mui (Daisy) / Senior Lecturer	PolyU SPEED
Co-Investigator(s)	Professor RUNDLE-THIELE, Sharyn / Professor & Director, Social Marketing	Department of Marketing / Griffith University
Others	-	-

3. Project Duration

	Original	Revised	Date of RGC / Institution Approval <i>(must be quoted)</i>
Project Start Date	01/01/2021	N/A	N/A
Project Completion Date	30/06/2022	N/A	N/A
Duration <i>(in month)</i>	18	N/A	N/A
Deadline for Submission of Completion Report	30/06/2023	N/A	N/A

Part B: The Final Report

5. Project Objectives

5.1 Objectives as per original application

1. *To enrich empirical social marketing research by linking marketing principles with public health promotion in relation to seasonal influenza vaccination;*
2. *To generate practical directions for the development of effective social marketing campaign which aims to enhance seasonal influenza vaccination among college students;*
3. *To identify challenges and possible remedies, in relation to upstream social marketing stakeholders such as health clinics, to implementing on-campus social marketing campaign for vaccination promotion in higher education institutions;*
4. *To provide healthcare providers and senior management of higher education institutions with actionable recommendations on how to motivate uptake of seasonal influenza vaccines among college students.*

5.2 Revised objectives

Date of approval from the RGC: N/A

Reasons for the change: N/A

5.3 Realisation of the objectives

(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

Objective 1:

To enrich empirical social marketing research by linking marketing principles with public health promotion in relation to seasonal influenza vaccination.

- Objective 1 was fully achieved.
- In-depth formative research, including a systematic review of extant knowledge, a segmentation study with data collected from 530 students, and a qualitative study with 8 upstream stakeholders and 4 student focus groups, were conducted to aim the development of a public health promotion program using marketing principles to influence seasonal influenza vaccination.
- The project was completed with a demonstration of applying marketing principles in public health promotion using the CBE framework in social marketing interventions based on formative research.

Objective 2:

To generate practical directions for the development of effective social marketing campaign which aims to enhance seasonal influenza vaccination among college students.

- Objective 2 was fully achieved.
- A quasi-experiment was conducted in PolyU CPCE campuses in 2021-22 winter flu season to test the effectiveness of the social marketing intervention developed.
- After the quasi-experiment, post campaign evaluation was conducted with students, health clinic, and student affairs office to solicit learnings and feedback from major stakeholders in flu vaccine promotion and administration in campus. Practical directions were identified and shared in the post campaign outcome evaluation manuscript published in Oct 2022.

Objective 3:

To identify challenges and possible remedies, in relation to upstream social marketing stakeholders such as health clinics, to implementing on-campus social marketing campaign for vaccination promotion in higher education institutions.

- Objective 3 was fully achieved.
- Challenges faced by upstream social marketing stakeholders were identified in the formative research. Possible remedies were discussed and pilot tested with the quasi-experiment in the 2021-22 influenza season in PolyU CPCE campuses. Feasibility and effectiveness of possible actions were summarized in the post campaign evaluation meeting with stakeholders in 2022 and the outcome evaluation manuscript published in Oct 2022.

Objective 4:

To provide healthcare providers and senior management of higher education institutions with actionable recommendations on how to motivate uptake of seasonal influenza vaccines among college students.

- Objective 4 was fully achieved.
- Recommendations for healthcare providers and senior management of higher education to enhance influenza vaccination rates identified in post campaign

evaluation were disseminated through internal evaluation meeting with school management, journal publications, conference presentation, and guest talks.

5.4 of objectives addressed to date

Objectives <i>(as per 5.1/5.2 above)</i>	Addressed <i>(please tick)</i>	Percentage Achieved <i>(please estimate)</i>
1. To enrich empirical social marketing research by linking marketing principles with public health promotion in relation to seasonal influenza vaccination	✓	100%
2. To generate practical directions for the development of effective social marketing campaign which aims to enhance seasonal influenza vaccination among college students	✓	100%
3. To identify challenges and possible remedies, in relation to upstream social marketing stakeholders such as health clinics, to implementing on-campus social marketing campaign for vaccination promotion in higher education institutions	✓	100%
4. To provide healthcare providers and senior management of higher education institutions with actionable recommendations on how to motivate uptake of seasonal influenza vaccines among college students	✓	100%

6. Research Outcome

6.1 Major findings and research outcome

(Maximum 1 page; please make reference to Part C where necessary)

Three journal manuscripts and **one conference paper** were published to disseminate the research findings, theoretical and managerial contributions of this project to enrich empirical social marketing research in public health promotion.

- i. A paper titled “Motivating seasonal influenza vaccination and cross-promoting COVID-19 vaccination: an audience segmentation study among university students” was published in a SJR Q1 journal *Vaccines*. This paper documented the results of a segmentation and cluster study to facilitate the development of future seasonal influenza social marketing interventions. Results were also presented in the International Social Marketing Conference in Feb 2022 to researchers with similar research interests. The two-step cluster analysis applied to a sample of 530 university students revealed four segments that demonstrate statistically significant differences in their attitudes, behaviours, intentions, and responses to promotion messages about seasonal influenza and COVID-19 vaccination. Accordingly, targeted promotion programs should be developed to influence individual segments.
- ii. A paper titled “Increasing seasonal influenza vaccination among university students: a systematic review of programs using a social marketing perspective” was published in a SJR Q1 journal *International Journal of Environmental Research and Public Health*. This paper is a systematic literature review summarizing seasonal influenza vaccination program among university students. Following PRISMA guidelines, this paper identified 12 peer-reviewed studies that were conducted in the field in the United States, Australia, and Spain. Research findings covered narrative summary of evidence of social marketing principles in seasonal flu vaccination promotion, and a meta-analysis of quantitative outcomes.
- iii. A paper titled “The application and outcome evaluation of a social marketing intervention to increase seasonal influenza vaccination among university students” was published in a SJR Q1 journal *Vaccines*. Based on the formative studies conducted between Jan 2020 to Aug 2021, this study drew upon the pre-intervention segmentation study and co-created interventions targeted at receptive segments. This paper outlines the development, implementation, and evaluation of a theory-driven social marketing vaccination intervention following the co-create-build-engage (CBE) framework. The intervention was implemented in the 2021-22 winter flu season in the PolyU CPCE Hunghom Bay and West Kowloon campuses. The intervention delivered a significant 343% increase in vaccination rates using a difference-in-difference analysis. Research findings indicated that online communication channels effectively engaged students to register for and receive their flu vaccine. Almost 90% of students who received vaccinations signed up in the first two weeks of the intervention program indicating that those who can be motivated will act early in the flu season. Financial incentives, as found in previous studies, were confirmed as highly effective in increasing awareness and influencing vaccination uptake behaviours. Friend referral incentives were also found to be influential in motivating vaccination uptake according to the buddy program results.

6.2 Potential for further development of the research and the proposed course of action (Maximum half a page)

This project revealed that seasonal influenza vaccination intervention study is significantly limited in Asian countries. This study is the first one conducted among university students in Asia while all extant studies were mainly conducted in the USA. Moreover, although this project evaluated the use of social marketing principles on vaccination promotion, the intervention was primarily focused on motivating segments with high vaccine acceptance rather than implementing a one-size-fits-all solution. Future intervention studies may explore the feasibility and effectiveness of running multiple programs targeting not only receptive segments but also students with high vaccine hesitancy.

7. Layman's Summary

(Describe in layman's language the nature, significance and value of the research project, in no more than 200 words)

While most influenza vaccination campaigns target at healthcare workers or high-risk population groups (e.g., elderly people), the impact of seasonal influenza on university students should not be neglected, particularly during the winter influenza surge. Yet, there is limited research on the promotion of influenza vaccination for university students who study, live, and socialise in close contact with a large variety of people on campus, resulting in a low vaccination rate among this underserved group. This project developed, implemented, and evaluated a social marketing vaccination programme tailored for university students to increase protection against influenza-like illnesses and complications, and to help achieve herd immunity across populations who spread viruses. Theoretically, the research findings of this project provide a detailed understanding of segment characteristics among university students that can be applied to develop an effective social marketing campaign that can motivate influenza vaccination. This enriches the empirical social marketing research by linking marketing principles with public health promotion in relation to seasonal influenza vaccination. Practically, this project provides healthcare providers and senior management of higher education institutions with actionable recommendations on how to motivate uptake of seasonal influenza vaccines among college students.

Part C: Research Output**8. Peer-Reviewed Journal Publication(s) Arising Directly From This Research Project**

(Please attach a copy of the publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal / Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
2021	2021	N/A	N/A	Daisy Lee*; Sharyn Rundle-Thiele; Gabriel Li	<p>Title: Motivating seasonal influenza vaccination and cross-promoting COVID-19 vaccination: an audience segmentation study among university students</p> <p>Journal: <i>Vaccines</i> 2021, 9(12), 1397 Special issue "Strategies to increase vaccination coverage and vaccine confidence 2.0"</p> <p>https://doi.org/10.3390/vaccines9121397</p>	Yes	Yes (Annex A)	Yes	No

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal / Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
2022	2022	N/A	N/A	Daisy Lee*; Sharyn Rundle-Thiele; Tai Ming Wut; Gabriel Li	<p>Title: Increasing seasonal influenza vaccination among university students: a systematic review of programs using a social marketing perspective</p> <p>Journal: <i>International Journal of Environmental Research and Public Health</i> 2022, 19, 7138.</p> <p>https://doi.org/10.3390/ijerph19127138</p>	No	Yes (Annex B)	Yes	Yes

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal / Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
2022	2022	N/A	N/A	Daisy Lee*; Sharyn Rundle-Thiele; Ben Y.F. Fong; Gabriel Li	<p>Title: The application and outcome evaluation of a social marketing intervention to increase seasonal influenza vaccination among university students</p> <p>Journal: <i>Vaccines</i> 2022, 10, 1671</p> <p>https://doi.org/10.3390/vaccines10101671</p>	No	Yes (Annex C)	Yes	Yes

9. Recognized International Conference(s) In Which Paper(s) Related To This Research Project Was / Were Delivered

(Please attach a copy of each conference abstract)

Month / Year / Place	Title	Conference Name	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Feb / 2022 / Online	Segmentation and audience analysis in social marketing for the promotion of seasonal influenza and COVID-19 vaccination among university students	International Social Marketing Conference	No	Yes (Annex D)	Yes	No

10. Whether Research Experience And New Knowledge Has Been Transferred / Has Contributed To Teaching And Learning

(Please elaborate)

Yes, the research findings were shared as case study examples in the class of BHMS4548

(Digital Marketing Strategy) for students to understand the use of digital marketing channels

to promote public health.

11. Student(s) Trained

(Please attach a copy of the title page of the thesis)

Name	Degree Registered for	Date of Registration	Date of Thesis Submission / Graduation
N/A			

12. Other Impact

(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, teaching enhancement, etc.)

The PI was invited to share the project results with teacher and students of

University of the Sunshine Coast's Indigenous and Transcultural Research Centre

(<https://www.usc.edu.au/research/indigenous-and-transcultural-research-centre>)

on 25 Aug 2022 through an online guest talk.

13. Statistics on Research Outputs

No. of outputs arising directly from this research project	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
					Type	No.
	3	1	0	0	Guest talk	1

14. Public Access Of Completion Report

(Please specify the information, if any, that cannot be provided for public access and give the reasons.)

Information that Cannot Be Provided for Public Access	Reasons