Presentation 2

A randomized controlled trial evaluating a theory-based online intervention via a hybrid chatbot in increasing pneumococcal vaccination among community dwelling individuals aged ≥65 years

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Summary:

Pneumococcal vaccination (PV) is effective in preventing community-acquired pneumococcal diseases among older adults. However, the PV coverage remained low in Hong Kong. Chatbots have demonstrated good ability to reach the target population and promote health-related behavioral changes. The primary objective of this randomized controlled trial (RCT) was to evaluate the relative efficacy of a hybrid chatbot in increasing PV uptake among Hong Kong residents aged ≥65 years.

This partially masked, parallel-group RCT was conducted between May 1, 2023 and November 30, 2024 in Hong Kong, China. Participants were aged ≥65 years, had a Hong Kong identity card, could speak and comprehend Cantonese, were smartphone and WhatsApp users, and no prior PV uptake. Participants were recruited through random telephone calls and were randomized to either the intervention or control group. In the intervention group, the rule-based component of the hybrid chatbot assessed participants' stage of change regarding PV uptake and then delivered stage of change-tailored interventions at Month 0, 1, 2 and 3. The question & answer component of the chatbot, supported by natural language processing functions, provided real-time answers to participants' questions related to PV. In the control group, the chatbot sent participants a link to access a standard online video covering PV-related information at Month 0, 1, 2 and 3. The primary outcome was self-reported PV uptake 12 months after completion of the intervention, which was validated by the research team.

A total of 374 participants (213 female [57.0%], mean [SD] age: 69.3 [3.1] years) were randomized to either the intervention (n=187) or the control group (n=187). The intention-to-treat analysis showed that the validated PV uptake rate was higher in the intervention group than in the control group (29.4% vs. 18.7%, p=0.01). Changes in the perceived costs related to PV uptake fully mediated the intervention effects. More participants in the intervention group than in the control group completed at least one intervention session (79.7% vs. 57.8%, p<0.001).

The hybrid chatbot was more efficacious than standard intervention in increasing PV uptake among older adults in Hong Kong. A hybrid chatbot may be a sustainable PV promotion for older adults. Currently, the research team received funding support from a pharmaceutical company (Merck Sharp & Dohme) to further upgrade the hybrid chatbot for PV promotion.