## Project Title

Intervention Elements and Behavior Change Techniques to Improve Prescribing for Older Adults with Multimorbidity in Singapore: A Modified Delphi Study

## Project Lead and Members

Project lead: Ding Yew Yoong

Project members: Tang Jia Ying, Penny Lun, June Teng Poh Hoon, Wendy Ang and Tan Keng Teng

## Organisation(s) Involved

Geriatric Education and Research Institute (GERI), Changi General Hospital (CGH) and Tan Tock Seng Hospital (TTSH)

## Healthcare Family Group Involved in this Project

Healthcare Administration, Medical, Pharmacy

## Specialty or Discipline (if applicable)

Research, Geriatric Medicine

## Project Period

Start date:  January 2020

Completed date: October 2020

## Aims

The aims of this project were to (1) identify intervention elements that are considered by experienced geriatricians to be important in optimising prescribing for older adults with multimorbidity and (2) to select the behaviour change techniques most suited for our local context.

## Background

See poster appended

## Methods

See poster appended

## Results

See poster appended

## Lessons Learnt

Prescribing appropriately for older adults with multimorbidity is an ongoing challenge in the field of geriatric care. Our project builds on the existing evidence found in the literature on interventions to optimize prescribing for this population, by recruiting experienced geriatricians to help identify the most suited intervention strategies for our local context.

Engaging local geriatricians who are the main stakeholders in the process not only ensured identification of feasible strategies that could be tailored to the clinical work flow, but also provided additional insights into common challenges experienced on a day-to-day basis. These constitute valuable information that would contribute to the development of an intervention with streamlined procedures for implementation.

## Conclusion

See poster appended

## Additional Information

The full manuscript for this project has been published in European Geriatric Medicine. Tang, J. Y., Lun, P. L., Teng, P. H. J., Ang, W., Tan, K. T., & Ding, Y. Y. (2021). Intervention elements and behavior change techniques to improve prescribing for older adults with multimorbidity in Singapore: a modified Delphi study. European Geriatric Medicine. https://doi.org/10.1007/S41999-021-00566-5

*Note: This project attained the Merit award (Category: SHBC Best Poster Award (Health Services Research)) at the Singapore Health & Biomedical Congress (SHBC) 2021*

## Project Category

Applied/ Translational Research, Qualitative Research, Care Continuum, Outpatient Care

## Keywords

Polypharmacy, Implementation Science, Geriatric, Multimorbidity, Potentially Inappropriate Prescribing

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# Intervention Elements and Behavioral Change Techniques to Improve Prescribing for Older Adults with Multimorbidity in Singapore: A Modified Delphi Study

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## Background

Polypharmacy is commonly observed in the older population and could result in adverse outcomes such as falls, medication non-adherence and drug-interactions[1]. Polypharmacy was found to be prevalent among community-dwelling older adults in Singapore at 14.5% and is associated with medication non-compliance[2]. Polypharmacy is also highly correlated with potentially inappropriate prescribing (PIP)[3]. A recent scoping review identified intervention elements which were mapped to the intervention functions of the Behavioural Change Wheel (BCW)[4]. These intervention functions can be operationalised through specific components known as the behavioral change techniques (BCTs)[5]. To calibrate these findings to our local context, a modified Delphi method was used. We aimed to **(1)** identify intervention elements that are considered by experienced geriatricians to be important in optimising prescribing for older adults with multimorbidity, and **(2)** to select the BCTs most suited to the local context. This will contribute to the knowledge base for developing a context-specific intervention to facilitate appropriate prescribing for this population.

## Methodology

**Delphi panel:** 20 geriatricians from 7 public hospitals in Singapore
**Study Period:** January to October 2020

**Formulation of Survey Statements**
- Scoping review on intervention elements served as the evidence base for Delphi statements formulation
- 23 BCTs that could operationalised the intervention functions were identified to be relevant
- A total of 69 statements were developed and presented in round 1 survey

**Definition of Consensus**
- Low group agreement for level of importance: **IQR >1** (statement were refined and continued to round 2)
- High group agreement for high importance: **Median ≥ 6 and IQR ≤1** (statement kept for analysis)
- High group agreement for low importance: **Median < 6 and IQR ≤1** (statement removed from further analysis)

**Delphi Rounds**
- Statements were rated using a 7-point Likert scale (1-Not at all, 2-Low, 3-Slightly, 4-Neutral, 5-Moderately, 6-Very, 7-Extremely) for their importance
- Feedback was delivered between the rounds to provide participants with an overview of the distributions of their peers' opinions
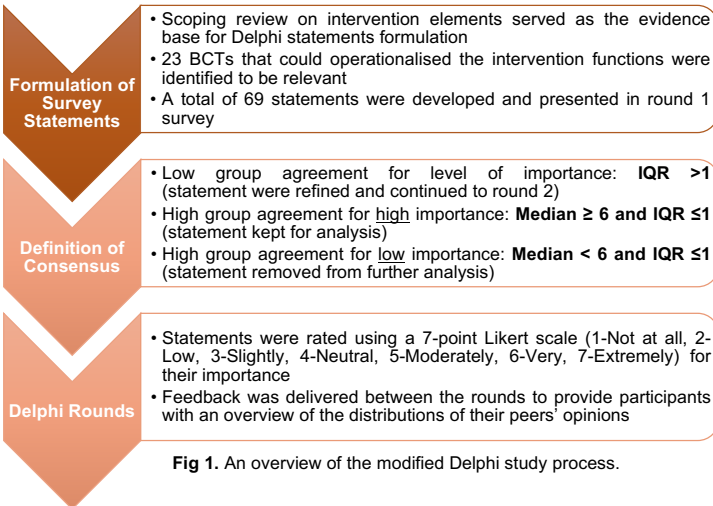
**Fig 1.** An overview of the modified Delphi study process.

## Discussion

- The importance of an intervention element was determined by the first statement (e.g. *Impact of medication review on optimal prescribing*).
- Similar to what was found in the literature, medication review was selected to be of high importance by the panel.
- Appropriate BCTs under each intervention functions were operationalized to the context of Singapore's outpatient clinics.
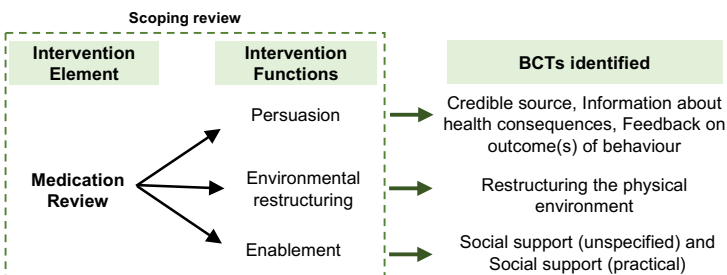
**Scoping review**

| Intervention Element | Intervention Functions | BCTs identified |
|---|---|---|
| Medication Review | Persuasion | Credible source, Information about health consequences, Feedback on outcome(s) of behaviour |
| | Environmental restructuring | Restructuring the physical environment |
| | Enablement | Social support (unspecified) and Social support (practical) |

**Fig 5.** Example of mapping an intervention element to intervention functions and BCTs.

- Fig. 5 shows an example on the transformation of an intervention element to BCTs → pharmacists as *credible sources* providing medication information, *information about health consequences* on potentially inappropriate prescribing, and providing *feedback on outcomes* following medication review. For easier access to pharmacists, *restructuring the physical environment* by stationing them at the clinic for medication review, could also be considered.
- Concerns raised by participants on time limitation and costs should be considered.
- **Strength of this study:** A good representation of expert opinions was captured among geriatricians from seven public hospitals.
- **Limitation:** Additional adaptation is needed when extending to other specialist clinics.

## Conclusion

- **32** statements reached consensus for high importance.
- This resulted in **7** intervention elements and **14** BCTs being identified as important.
- This information will be salient when co-creating an intervention to optimise appropriate prescribing for older adults with stakeholders.
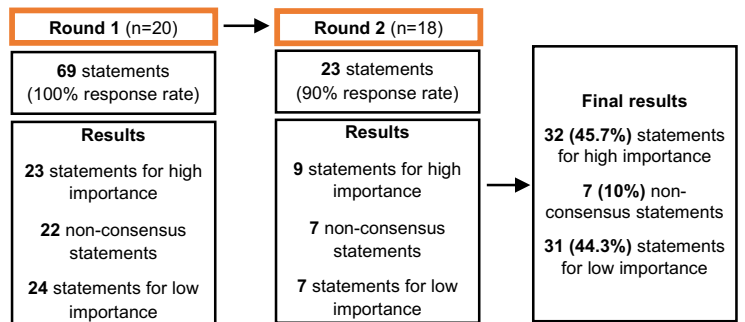
## Results

**Round 1** (n=20) → **Round 2** (n=18)

**Round 1 (n=20)**
69 statements (100% response rate)
**Results**
23 statements for high importance
22 non-consensus statements
24 statements for low importance

**Round 2 (n=18)**
23 statements (90% response rate)
**Results**
9 statements for high importance
7 non-consensus statements
7 statements for low importance

**Final results**
32 (45.7%) statements for high importance
7 (10%) non-consensus statements
31 (44.3%) statements for low importance

**Fig 2.** An overview of the results from both rounds.

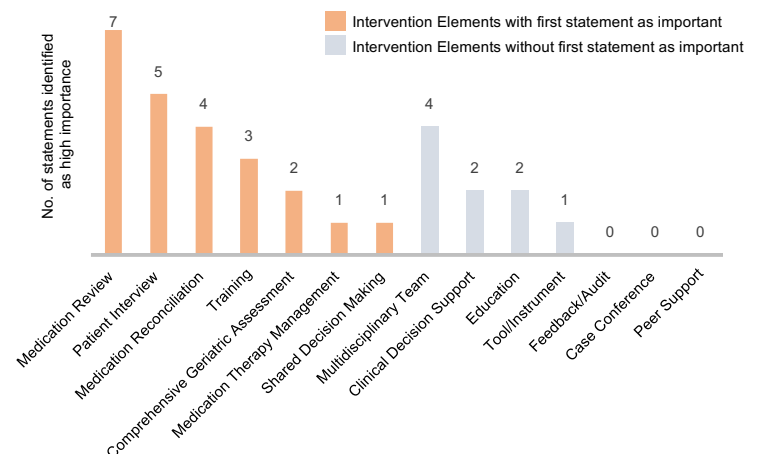**Fig 3.** An overview on the number of high importance statements for each intervention element.

| BCTs Groupings | BCTs |
|---|---|
| Goals and planning | Goal setting (behavior), Problem solving, Goal setting (outcome), Action planning, Review outcome goal(s) |
| Feedback and monitoring | Feedback on outcome(s) of behavior |
| Social support | Social support (unspecified), Social support (practical) |
| Shaping knowledge | Instruction on how to perform the behavior |
| Natural consequences | Information about health consequences |
| Associations | Prompts/cues |
| Comparison of outcomes | Credible source |
| Antecedents | Restructuring the physical environment, Restructuring the social environment |

**Fig 4.** BCTs of high importance statements and their respective groupings according to Behavior Change Technique Taxonomy v1 (BCTTv1).

## References

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