

# Medication adherence among the older adults: challenges and recommendations

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## Growing burden of the ageing populations

There is an increasing burden of the elderly population in many countries, with an estimated total of 2.37 billion population aged >65 years globally by 2100.<sup>1</sup> In Hong Kong, the number of people aged >65 years is expected to increase from 1.19 million to 2.51 million from 2016 to 2046, then comprising more than one third of the total population.<sup>2</sup> The substantial increase in the elderly population will inevitably contribute to the burden of public health and healthcare service, with chronic diseases and multimorbidity being the critical challenges.

## Chronic diseases associated with ageing populations

The leading causes of morbidity and mortality in the elderly population are chronic diseases. More than 70% of the population aged ≥60 years have one or more chronic diseases in Hong Kong, with hypertension, arthritis, and eye diseases being the most frequent morbidities.<sup>3</sup> The major causes of mortality among the elderly population include cancer, heart diseases, cerebrovascular disease, and pneumonia. Moreover, dementia is also very common: local data indicate that almost 1 in 10 community-dwelling elderly individuals have mild cognitive impairment (8.5%) or mild dementia (8.9%) in Hong Kong.<sup>4</sup>

## Multimorbidity associated with ageing populations

Multimorbidity is commonly defined as the presence of two or more chronic conditions. Its prevalence has been increasing over the past decade primarily due to the ageing population and westernised lifestyles.<sup>5</sup> A cross-sectional community-based study in Hong Kong found that 42% of individuals aged ≥60 years had multimorbidity.<sup>6</sup> Multimorbidity poses a heavy clinical and public health burden by increasing healthcare cost and utilisation. Considering most healthcare systems globally are developed to treat

single disease, multimorbidity leads to major challenges for healthcare providers.

## Importance of medication adherence among elderly individuals

Elderly patients with chronic diseases and multimorbidity have a higher risk of polypharmacy and suboptimal medication adherence. In general, adherence rates are lower among elderly individuals with chronic conditions than those with acute diseases, and the rates may differ among disease categories. According to a survey conducted by the World Health Organization, approximately 40% of older patients with chronic conditions do not follow their planned prescriptions.<sup>7</sup> Polypharmacy, which is often defined as the concurrent prescription of five or more drugs, is commonly seen among elderly patients with multimorbidity. Approximately two thirds of community-dwelling older patients have polypharmacy.<sup>8</sup> A substantial proportion of patients with polypharmacy take 10 or more different types of drugs (“hyperpolypharmacy”). Polypharmacy is more closely related to suboptimal medication adherence than other reasons, such as adverse drug reactions (ADRs), inappropriate medication, or pharmacological interactions.<sup>9</sup> As a result, the high prevalence of polypharmacy and hyperpolypharmacy subsequently increased the risk of suboptimal medication adherence among elderly individuals. This situation could be even worse in elderly patients with decreased functionality, in particular among those with cognitive impairment and dementia.<sup>10–13</sup>

In this issue of the *Hong Kong Medical Journal*, Wong<sup>14</sup> reviewed the medication-related problems among the older population, including medication non-adherence. The results show that the elderly patients are at higher risk of medication-related issues due to the physiological changes with ageing and multiple medications used for multimorbidity. Polypharmacy is associated with inappropriate

drug use which may in turn leads to multiple geriatric syndromes and hospitalisation. Also, either intentional or unintentional suboptimal medication compliance can lead to treatment failure. The article points out that a substantial proportion of ADRs are preventable, and that effective strategies are available to tackle these issues to achieve good medication adherence and drug safety. The strategies included deprescribing with the withdrawal of drugs that are considered of minimum, using a patient-centred approach which considers patient preferences when determining the treatment goal, and adopting a multidisciplinary approach in medication management.

Medication adherence measures the extent to which individual's medication taking behaviour complies with the planned prescriptions from physicians. A patient taking a proportion of 80% to 120% for prescribed drugs over a certain period is generally considered as an adherent to medications.<sup>7</sup> Medication adherence is crucial and essential as it has a substantial impact on the effectiveness of medications and control of chronic conditions. The World Health Organization has used "adherence enhancing" as an important strategy to effectively tackle chronic conditions.<sup>15</sup> By contrast, medications non-adherence is a phenomenon where the individual does not adhere to the prescribed medications by healthcare providers, including under-utilisation, over-utilisation, and incorrect utilisation. There are several ways to measure medication adherence, including completing self-reported questionnaires (eg, Brief Medication Questionnaire<sup>16</sup>), counting pills, or measuring drug or metabolite levels through a blood test.

Suboptimal medication adherence can result from intentional and unintentional factors.<sup>17</sup> Intentional non-adherence is caused by patients who simply do not follow the prescribed instructions or intentionally stop taking a medication. Unintentional non-adherence may be caused by forgetfulness or limited knowledge of the diseases or prescribed medications, or by physical, psychological, or mental barriers. Physicians may have inadequate time to discuss with patients on the medication adherence during clinical encounters. Factors for medication non-adherence that are commonly reported include complexity of medications, presence of ADRs, frequent changes to prescriptions, and limited family or social support.

The major health consequences of suboptimal medication compliance among elderly patients include poor medication response, decreased treatment safety, and impaired life quality.<sup>7</sup> Other consequences increased number of emergency visits, duration of hospitalisations, morbidity, mortality, and healthcare costs. A substantial proportion of preventable ADRs are attributable to suboptimal

medication adherence among elderly patients. For instance, 33% to 69% of drug-related hospitalisations are caused by poor medication adherence in the United States, which induces an avoidable annual healthcare cost of US\$100 to 300 billion.<sup>18</sup> Suboptimal medication adherence among patients is also a source of frustration and job dissatisfaction for healthcare providers.

## Recommendations

Different strategies to enhance medication adherence among the elderly patients have been investigated. Most strategies aim to modify personal health behaviours by delivering counselling, reminders, education, or a combination of these approaches. These approaches can be generally divided into political, organisational, behavioural, and educational interventions, with different focuses on policy, system and environmental, and patient and their family levels.<sup>19</sup>

### Policy level

Political interventions mainly focus on allocating more resources for enhancing medication adherence to different related sectors, including education, healthcare cost, and health regulations.<sup>20</sup> It is important to raise public awareness and knowledge on suboptimal medication adherence among elderly patients. Another typical approach to enhancing medication adherence among elderly patients is to reduce their out-of-pocket expenses for medication prescriptions. Relevant regulations can also be developed to ensure that healthcare professionals have sufficient attention for the issue of medication adherence among patients.

### System and environmental level

Organisational interventions aim to reduce barriers to medication adherence by pharmacy refills and adherence reminders comprehensively and systematically. This is often carried out by a multidisciplinary team involving physicians, pharmacists, psychologists, and community care givers.<sup>21,22</sup> It is important for physicians to enhance communication by listening to patients more about their concerns to determine a compromised medication plan.<sup>23</sup> Regular assessment and simplification of treatment prescription by pharmacists is needed. Elderly patients who had suspected psychological problems such as depression should be assessed by psychologists for medication management. Community caregivers are also helpful in medication management for the elderly patients with less family support.<sup>24</sup> Behavioural interventions modify the environmental factors to facilitate medication use with instruments among the elderly patients. These interventions include

instruments such as alarm clocks, reminder lists, or advanced pillboxes, as well as group social support, surveillance feedback system, and follow-up visits. Mobile health (mHealth) interventions, such as smartphone applications, can also be innovative and promising means to assist in the management of medication adherence for elderly patients with chronic diseases.

### Patient and their family level

Educational interventions, either based on group or individual learning from healthcare professionals, are useful for promoting medication adherence among elderly patients.<sup>25</sup> They provide elderly patients or their caregivers with better knowledge of their health conditions, prescriptions, ADRs, and the importance of compliance to facilitate the informed decision makings. It is also useful to encourage elderly patients to be actively involved in the disease management process, for instance, self-monitoring of blood glucose, blood pressure, and blood lipids. Family members are encouraged to assist in medication management, especially for elderly people with decreased functionality, mood disorders, or cognitive impairment.

### Author contributions

All authors contributed to the editorial, approved the final version for publication, and take responsibility for its accuracy and integrity.

### Conflicts of interest

The authors have disclosed no conflicts of interest.

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