Medication misuse among elderly population in Pakistan

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We applaud Garfinkel and colleagues for their recent publication that summarized the issue of polypharmacy and the prescribing of chronic medications [Garfinkel *et al.* 2015]. Polypharmacy is a very critical issue to address, especially in the elderly population. Pakistan is the sixth most populous country in the world, with an estimated population of 199 million, 8 million (approximately 4.0%) of whom are elderly [Garfinkel *et al.* 2015]. The majority of this particular group is vulnerable to several acute and chronic diseases [Baig *et al.* 2000]. Due to the rising prevalence of diseases and comorbidities, polypharmacy use is more prevalent among elderly patients, in order to enhance the therapeutic outcomes and maintain their quality of life [Cohen-Kohler, 2007]. Also, a decline in body physiology, and variations in pharmacokinetics and pharmacodynamics in the elderly, makes them more prone to various drug-related problems, such as altered drug responses [Anathhanam *et al.* 2012]. Altered drug responses such as prolonged drug half-lives, adverse drug reactions and drug–drug interactions, thus become more frequent, and often result in significant morbidity and mortality in the elderly population [Anathhanam *et al.* 2012]. A recent study reported that elderly cardiac patients in Pakistan had a significantly higher risk of potential drug–drug interactions compared with nonelderly patients [odds ratio (OR) 0.167–0.353 (95% confidence interval; $p<0.001$)] mainly due to polypharmacy, which was present in around 98.0% of prescriptions [Murtaza *et al.* 2015].

The other main threat to the elderly population is self-medication, which is rising due to the easy access of medicines and antibiotics. These can be purchased easily from medical stores, without even a prescription from a registered medical professional [Aqeel *et al.* 2014]. For the portion of the population lacking access to healthcare, pharmacies and small town dispensaries (which are ubiquitous all over Pakistan) are the primary points to seek healthcare. Unfortunately, some drug retailers selling drugs at these dispensaries are not qualified, and lack information on the indications, contraindications and the associated side effects of the drugs being dispensed, thus putting the lives of the elderly population at risk [Mahmood *et al.* 2014]. The majority of the elderly population in Pakistan is still living in a joint family system and being cared by their family members; however, many are moving toward the trend of a nuclear family system, and leaving their elderly parents on their own [Sabzwari and Azhar, 2011]. For instance, people migrate from one city to another seeking jobs, leaving their parents back in their hometowns, living independently from them. To cope with such circumstances, proper arrangements should be made to ensure adequate elderly-care facilities: a recent study reported that nearly one-third of elderly patients are unable to take their medicines regularly, mainly due to their poor socioeconomic status, forgetfulness and unacceptability of medicines [Baig *et al.* 2000].

Another important factor affecting the health of elderly patients in Pakistan is the age of retirement. In Pakistan, the retirement age is 60 years old, after which the majority of people become unable to earn enough money to support their family. Thus they become largely dependent on their family members for financial support. Due to scarce resources and limited access to pension plans in Pakistan, only government employed people get benefits [Sabzwari and Azhar, 2011]. Furthermore, when nongovernmental employees get ill they fail to get benefits from subsidized healthcare care facilities, due to a preference for private healthcare facilities. There are also very limited resources available, as well as a lack of planning by the government for its elderly population, making healthcare expenditure unaffordable for many [Baig *et al.* 2000]. Although most modern countries have

implemented various health insurance plans, in Muslim countries such as Pakistan, people avoid health insurance schemes, as they are strictly forbidden in Islam [Khan *et al.* 2011]. Such limitations and poor circumstances make elderly patients either suffer through their ailments without seeking proper medical care services, or use alternative medicines, due to poor choices in seeking healthcare providers, low health literacy, and a common belief that modern medicines have more side effects than alternative medicines [Anwar *et al.* 2015]. These alternative medicines can include homeopathy, unani medicines, herbal medicines and even spiritual healers. Such medical pluralism distorts the understanding of, and belief in, complementary and alternative medicines, and poses a threat to elderly patients, as some of these health systems including some medicines that are yet not approved by the official authorities in Pakistan. In addition, there are currently no specific clinical guidelines for physicians regarding the management of elderly patients in Pakistan. Although various clinical practice guidelines, such as the Beers Criteria and STOPP/**START** criteria exist and are helpful in selecting the most appropriate and well tolerated drugs for elderly patients, they are aimed specifically at western populations [Wu *et al.* 2015]. Thus, there is a need for Pakistani population-specific guidelines, in order to minimize medication misuse in high-risk populations such as elderly patients.

Irrational medication use in the elderly population can be attributed to their low level of health literacy, and various hindrances in health-seeking behavior.

In conclusion, there is an immediate need for a national action plan for elderly health in Pakistan. Neglecting the health of the elderly population may cause huge health and economic burdens on the society of, and the healthcare system of Pakistan.

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