Antipsychotic polypharmacy in selected Asian countries

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ABSTRACT

The study determines the antipsychotic polypharmacy in selected Asian countries particularly Japan, Singapore, Korea, China, Taiwan, and Hongkong. It is a descriptive correlational study that utilizes the clustering data mining technique. Gathered data from the internal and analyzed using appropriate statistical management. Findings reveal that Japan and Singapore have the highest prevalence of antipsychotic polypharmacy. In terms of care settings, antipsychotic polypharmacy is prevalently high in both general hospitals and psychiatric facilities. Being male of increasing age and the duration of illness are directly proportional to the prevalence of antipsychotic polypharmacy.

I. INTRODUCTION

The study deals with the issues and trends on antipsychotic polypharmacy among selected Asian countries. Polypharmacy pertains to the use of multiple medications by a single patient. When a patient uses two to four medications, it is termed minor polypharmacy while the use of more than four medications constitutes major polypharmacy. Psychotic symptoms are reported at a higher and varying rate in Asia (Chong, 2010) and antipsychotic medications are among the most common drugs being taken in multiple numbers by a single patient.

According to Stibich (2010), the prescription of an alarming number of uncoordinated medications to a single patient constitutes polypharmacy. An individual patient who is old and under the care of multiple physicians, may most likely experience polypharmacy (Hanlon, 2007; Stibich, 2010). Antipsychotic polypharmacy in East Asia had been widely employed as a prescribing practice in the management of clients with psychotic symptoms (Chong et al., n.d.).

The need to understand the trend in the practice of antipsychotic polypharmacy in different countries especially in Asia is a critical component in the management of psychotic disorders such as schizophrenia. Moreover, getting abreast with the prevalence of antipsychotic polypharmacy and aware of its related factors allow health care professionals to establish better medication regimen management.

Given these, the researchers believe that it is necessary to be vigilant in this practice in order to make this management more acceptable as a treatment modality and decrease the likelihood of antipsychotic polypharmacy to generate more health-related problems in the future.

II. OBJECTIVES

The study determined the prevalence of antipsychotic polypharmacy and explored its related factors in selected Asian countries. Specifically, it sought the association of antipsychotic polypharmacy to patients in terms
of (a) demographics and (b) clinical factors. Finally, it aimed to identify recommendations to prevent health-related problems related to its practice.

III. CONCEPTUAL FRAMEWORK

The conduct of the study is based on the premise that medication regimen management practice is highly dynamic. The researchers believe that the mechanics of drug prescription can be attributed to the number of factors. Having this in mind, the researchers submit to the idea that pharmacologic approaches to treat psychotic symptoms can vary significantly. This holds true for polypharmacy. In trying to understand this concept, the authors attempt to uncover significant variables that can be related to the prescription of multiple medications to a single psychiatric patient. This is of substantial value as healthcare delivery system nowadays has greatly evolved into a more sophisticated but complex process.

IV. REVIEW OF RELATED LITERATURE

The study of He et al. in 2011 reveals that the proportion of antipsychotic polypharmacy prescription decreased from 46.8 % in 2001 to 38.3 % in 2004, and increased to 43.4 % in 2009 with wide inter-country variations at each survey. The research used multiple logistic regression analysis of the entire sample which revealed that patients who most likely experience polypharmacy were young, and receiving higher dosage of neuroleptics especially those with more negative and positive symptoms. This implied that age and severity of illness have something to do with the occurrence of antipsychotic polypharmacy.

A study using meta-analysis of 19 studies involving 1,229 subjects reveals that antipsychotic polypharmacy exhibited a significant advantage over monotherapy for psychotic patients in terms of efficacy and all-cause discontinuation. Moreover, the simultaneous use of two neuroleptic agents appears to be more beneficial than adding a second drug to a concurrently used medication. Most of the positive studies were conducted in China (Correll, Rummel-Kluge, Corves, Kane, & Leucht, 2009) and Japan (Correll, Rummel-Kluge, Corves, Kane, & Leucht, 2009).

Previous studies of the prescription patterns of antipsychotic drugs in patients with psychotic disorders including schizophrenia have revealed widely variable rates (13–90 %) of antipsychotic polypharmacy, defined as the use of more than one antipsychotic (Ito, Kubota, & Sato, 1999; Keks, Alton, & Hope, 1999; Weissman, 2002; Jaffe & Levine, 2003; Tapp, Wood, Secrest, Erdmann, Cubberley, & Kilzieh, 2003). The wide variation in the rates of combination antipsychotic therapy between countries has been attributed to differences in healthcare systems affecting availability and economic cost of antipsychotics (Johnstone et al., 2000), local prescription traditions and culture as well as personal experience and choice (Fleischhacker, 2003).

The higher rates of antipsychotic polypharmacy may be related to the treatment setting, since a psychiatric hospital has a higher likelihood of admitting more seriously ill patients compared with a general hospital psychiatric unit. The combination of more than one antipsychotic may be an attempt at preventing the rapid escalation of the dose of any single medication (Freudenreich & Goff, 2002) or as an alternative towards the management of treatment unresponsiveness or partial response (Stahl, 2002).

V. DESIGN AND METHODS

The study used a descriptive correlational design to establish an association between the prevalence of polypharmacy and its impact on the different factors. It also used comparative design to find out for a significant difference in the extent that polypharmacy impacts on the countries in terms of gender and treatment setting.

Data were gathered from internet sources particularly US National Library of Medicine-
National Institute of Health and Online British Journal. The database contains more than 21.6 million records from 5,582 selected publications covering biomedicine and health from 1950 to the present and facilitates evidenced-based medicines. Articles published here are built on extensive searches to make the findings useful and meaningful.

The variables in this study were (1) prevalence, measured in terms of percentage per population who experienced antipsychotic polypharmacy in a certain Asian country; (2) demographics, measured in terms of age and gender; and (3) clinical factors, measured in terms of the duration of illness, use of anticholinergic drugs, and treatment setting.

Data mining techniques that was utilized in this study was clustering in order to group variables based on certain characteristics. It was employed to generate tentative generalizations and theories based on the groupings of certain variables.

VI. RESULTS AND DISCUSSION

The table presents the prevalence of antipsychotic polypharmacy (APP) in the six Asian countries in terms of percentage. It also shows the data on demographics (age, gender) as well as clinical factors (DOI, ACU, treatment settings) that could influence or be associated with the antipsychotic polypharmacy prevalence.

Table 1. Data distribution

<table>
<thead>
<tr>
<th>Country</th>
<th>APPP&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>DOI&lt;sup&gt;b&lt;/sup&gt;</th>
<th>ACU</th>
<th>Gen Hosp</th>
<th>Psych Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>78.6</td>
<td>52.9</td>
<td>58.4</td>
<td>41.6</td>
<td>65.8</td>
<td>50.4</td>
<td>78</td>
<td>78.1</td>
</tr>
<tr>
<td>Singapore</td>
<td>70.3</td>
<td>46.2</td>
<td>58.7</td>
<td>41.3</td>
<td>32</td>
<td>6.7</td>
<td>82</td>
<td>100</td>
</tr>
<tr>
<td>Korea</td>
<td>35.5</td>
<td>39.1</td>
<td>57</td>
<td>43</td>
<td>17.7</td>
<td>37.1</td>
<td>76</td>
<td>38.7</td>
</tr>
<tr>
<td>China</td>
<td>25.2</td>
<td>38.5</td>
<td>50.9</td>
<td>49.1</td>
<td>28.1</td>
<td>64</td>
<td>34.7</td>
<td>67.3</td>
</tr>
<tr>
<td>Taiwan</td>
<td>22.2</td>
<td>38.2</td>
<td>55.6</td>
<td>44.4</td>
<td>25.7</td>
<td>48.6</td>
<td>61.4</td>
<td>100</td>
</tr>
<tr>
<td>Hongkong</td>
<td>12</td>
<td>45.4</td>
<td>58.3</td>
<td>41.7</td>
<td>52.8</td>
<td>46.3</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

<sup>a</sup> Antipsychotic polypharmacy prevalence  
<sup>b</sup> Duration of illness (>20 years)  
<sup>c</sup> Anticholinergic use
As seen on the table, Japan and Singapore have the highest prevalence of antipsychotic polypharmacy as compared to the four other countries. Relevant to the development of these nations, it is not surprising that those psychotic patients from these areas experience polypharmacy practically because of the fact that they are capable of purchasing multiple medications. The average age at which patients experience antipsychotic polypharmacy in these nations appears to be also higher as compared to other nations. Still with Japan and Singapore, males are more likely to experience this healthrelated issue which is contrary to their female counterparts. This is also true with Hongkong. The other three countries—China, Korea, and Taiwan with lower antipsychotic polypharmacy prevalence have higher female gender involvement. In terms of duration of illness, Japan and Hongkong have the most number of patients whose illness have been existing for more than 20 years. As for the use of anticholinergics, Singapore appears to have a significantly lower percentage compared to the other five nations. Since those drugs counteract antipsychotic adverse reactions, the use of these agents possibly, though not conclusively, induce an influence on Singapore’s antipsychotic polypharmacy prevalence. On treatment settings, more antipsychotic polypharmacy incidences were experienced by patients in the psychiatric facility as compared to those in the general hospitals.

The table below presents the results of data analysis using multivariate clustering. This was done in order to group the countries according to some similar characteristics.

Table 2. Cluster Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Grand centroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPP</td>
<td>74.45</td>
<td>23.725</td>
<td>40.6333</td>
</tr>
<tr>
<td>Age</td>
<td>49.55</td>
<td>40.3</td>
<td>43.3833</td>
</tr>
<tr>
<td>Male</td>
<td>58.55</td>
<td>55.45</td>
<td>56.4833</td>
</tr>
<tr>
<td>Female</td>
<td>41.45</td>
<td>44.55</td>
<td>43.5167</td>
</tr>
<tr>
<td>DOI</td>
<td>48.9</td>
<td>31.075</td>
<td>37.0167</td>
</tr>
<tr>
<td>ACU</td>
<td>28.55</td>
<td>49</td>
<td>42.1833</td>
</tr>
<tr>
<td>HospSetting</td>
<td>80</td>
<td>55.525</td>
<td>63.6833</td>
</tr>
<tr>
<td>PsychSetting</td>
<td>89.05</td>
<td>76.5</td>
<td>80.6833</td>
</tr>
</tbody>
</table>

As observed in the table, cluster 1 consists of countries with high prevalence of antipsychotic polypharmacy namely, Japan and Singapore while cluster 2 countries are those with lower ages of antipsychotic polypharmacy prevalence specifically Korea, China, Taiwan and Hongkong. Cluster 1 composed of countries with demanding lifestyle due to the nature of their jobs, economic advancement and the tendency to encounter stressful activities. These activities are one
of the contributing factors that can affect the psychological performance of a person resulting to the use of antipsychotic drugs. The data reveal that clustered developed countries, practiced APP due to remarkable sources of funds. Hence, can afford to spend costly effective medicines and very much influence on the therapeutic effects of polypharmacy because of advance information in medicine. While cluster 2, as poor countries they have the tendency to purchase cheaper drugs which may have higher side effects that require the use of another anticholinergic drugs. Thus, the rate of ACU is high. They have limited information on the advancement of medicine and not very much influenced of multiple drug combination specifically related to polypharmacy. The use of anticholinergic drug for most developed countries is low since the costly effective medicines use, exhibit lesser side effects hence do not require another anticholinergic drugs for its side effects.

The findings reveal that as the age increases, the antipsychotic polypharmacy prevalence also increases. This implies that the older one gets, the more likely he or she be required to take multiple medications to treat psychotic symptoms. This is due to long term use of drugs that produce multiple side effects and it is where other medications are again required for such new side effects.

‘Stable’ patients with psychosis, receiving long-term antipsychotic monotherapy, may develop an acute exacerbation of psychotic symptoms, worsening of agitation or insomnia and be prescribed of an additional antipsychotic on an 'as required' or short-term basis. However, such short-term or ‘as required’ prescriptions may develop into medium- or long-term adjuvant treatments, particularly if considered successful in the short term. A natural reluctance to risk a recurrence of symptoms tends to perpetuate this situation and ultimately results in long-term antipsychotic polypharmacy (Langan & Shajahan, 2010).

In cluster 1, being male also dictates an increase in the antipsychotic polypharmacy prevalence than cluster 2. The demand of lifestyle, nature of jobs, economic and technological advancement play an important role to the deleterious health status of people in Japan and Singapore. It is more prevalent on psychological effects rather than in other illnesses. Thus, the need of polypharmacy is more common in developed countries due to greater responsibility in the society. With this, it also signifies that gender has an impact on the prevalence of antipsychotic polypharmacy. Another is, receptor interaction follows therapeutic pattern in terms of pharmacokinetic response, male requires higher dose of drugs since dosage requirement is based on weights of the person and surface area of the body (Katzung, 2010). Most males are structurally bigger than the females, with this, male requires more APP than female. In cluster 2, the role of female in cultural, domestic and pattern of responsibility is highly emphasized in poor countries resulting to psychological manifestations among females, hence tend to use APP than in cluster 1.

Furthermore, the phenomenon increases significantly with longer duration of illness that means that the longer the illness persists and the more it becomes chronically severe, it would necessitate the use of more neuroleptic medications. When clinicians aim to switch their patients from one antipsychotic to another by cross-tapering, the switch may never be fully completed as symptoms stabilize or improve. This leads to reluctance on the part of clinician or patient to complete the switch and may postpone the completion of the switch indefinitely, leading to long-term antipsychotic polypharmacy (Langan & Shajahan, 2010). A study conducted in Tokyo, showed longer duration of illness and lower subjective distress caused by side effects were predictive for a more favorable subjective response to medication. On the other hand, female gender, younger age, and lower BPRS scores were independently correlated with a positive subjective response to medication in Beijing. Total variance explained by the regression model was 27 % for the Tokyo group and 35 % for the Beijing group (Kuroda et al., n.d.).
Finally, the treatment locations, particularly psychiatric setting, also increase the antipsychotic polypharmacy prevalence. In cluster 1, developed countries are more particular of confinements due to readily available funds and advance understanding of medicine, while cluster 2 most especially in China they will supplement or employ alternative medicine, thus hospital setting would not be more preferable. A study was conducted on “Attitudes toward taking medication among outpatients with schizophrenia: cross-national comparison between Tokyo and Beijing” showed that years of education and total length of hospitalization were significantly longer for subjects in Tokyo. In addition, samples were significantly different with regard to health economic resources; all subjects in Tokyo had health insurance, whereas only 25% of the subjects in Beijing had insurance (Kuroda et al., n.d.). Cultural beliefs can also influence the decisions of confinements in China, Korea and Taiwan.

This implies that in-patients (admitted patients) are more likely to experience antipsychotic polypharmacy in psychiatric facilities. In most admitted patients, they are exposed to APP because of some complications that may likely occur while existing APP drugs are in used. If complications occur, specialized doctors are needed and another drugs may be prescribed that will contribute to the use of polypharmacy drugs.

VII. CONCLUSION

Financial resources greatly influence the health needs of a person. If more financial funds are available, the more drugs can be provided for its treatment. Countries like Japan, Singapore, China, and Korea being developed countries with high financial resources have high APP prevalence.

There are factors that influence APP most especially the demographic and clinical profile of the patients. The prevalence of antipsychotic polypharmacy is associated with both demographic and clinical factors. This is of important consideration for health care professionals in order for them to establish psychiatric management holistically, paying significant attention to demographic and clinical variables.
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REFERENCES


Psychosocial determinants of corruption was recommended in order to give emphasis that corruption is innate in nature in which discontentment and security takes place as a motivating factor, why a certain person committed corruption, it involves Maslow's Hierarchy of needs which determines the self-actualization as the higher needs of man or a belief that he/she was fully used all their potentials as a result of full satisfaction. In Sociological and Psychological Perspective, man has its own individual characteristics, ability to perceive what is right and what is wrong, as well as the ability to observe and adopt what is being observed. As determinants of corruption two (2) theories are involve anchored by Bandura's observation Learning Theory. (1) The Freudian theory which asserts man Id, ego and super-ego and the (2) second theory eventually imitate observable anti-social acts that would immediately satisfy their needs. Derived propositions are the following: (1) People with low sense of guilt will eventually imitate observable anti-social acts that would immediately satisfy their needs (2) Some people prefer to commit corrupt acts because it has greater payoff but with less threat on legal punishment. (3) Individual with great sense of his moral conscience can achieve self-actualization. (4) Actualized People will never engage in corruption. (5) Self-actualized people are Incorruptible.

Keywords: psychosocial, corruption, self-actualizer

I. INTRODUCTION

Corruption is one of the primary problem and concern in many underdeveloped and developing nations. Substantial portion of funds allocated to spur social and economic activities in the countries are siphoned into the pockets of few individuals, thus resulting into sub standards delivery of goods and service in the countries. The United Nations (2009) estimated that roughly 25% of the national budgets of countries listed as among those with high corruption incidences remains unaccounted for and end up in the personal custody of highly authoritative individuals. While governments of the countries have passed laws and ordinances imposing stiff sanction on individuals convicted for corruption, the situation has essentially remained the same over the years. Government interventions that target the symptoms of corruption rather than the cause of corruption are and will always remain in effective. The dimension of corruption committed in the sphere of the legal economy are possibly obvious but that may, indeed be seen to be more reason for the study of corruption on the interactional level. This paper attempts to explain the psycho-social...