Self-Medication in COVID-19 Pandemic: The survival of the fittest

Kiran Rafiq¹*, Shagufta Nesar², Humaira Anser¹, Qurat-ul-Ain Leghari³, Alisha Hassan¹, Alina Rizvi¹, Aleeza Raza¹, Zafar Saied Saify⁴

1 Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

2 Jinnah College of Pharmacy, Sohail University, Karachi, Pakistan

3 Zia-ud-Din College of Pharmacy, Zia-ud-Din Medical University, Karachi, Pakistan

4 International Center for Chemical Sciences, H. E. J. Research Institute of Chemistry, University of Karachi, Karachi, Pakistan

*Corresponding author: E-mail: kiran.rafiq@jsmu.edu.pk
Abstract

After the WHO declaration of the COVID-19 pandemic intense scuffling against novel coronavirus was observed and established fatal in most regions of the world. High fatality rate and socioeconomic downfall affected the health of non victimized individuals and consequently, health care measures, scheduled clinical and hospital visits avoided by the population hence the adaptation of self-medication proved as the mere troubleshooter for the general population as a swift safeguard for the further possible vulnerable situation. The present study is designed to observe the adaptability of self-medication with pros and cons due to the involved factors of fear of coronavirus, among the general population and for purpose, a questionnaire on the Zenodo-scale was developed and asked to respond from adults and teens after taking consensus, that further analyzed through IBM SPSS Statistics Version 26.

The outcome study was amazingly found with high compliance with self-medication among the focused population during the period of COVID. Estimated results showed highly significant correlation 0.000, p< 0.05 between the adaptation of self-medication and pandemic situation, which was estimated from Chi-square and Fisher tests. However, the fear of coronavirus made the practice or malpractice a survival of fittest, an embedded ability of human nature.

Keywords: COVID-19, Coronavirus, self-medication, Zenodo scale, survival of fittest, pandemic.
Introduction:

The high peak of coronavirus and pandemic consequences led to the exponential numbers of positive cases on day after day in almost all the regions of the world and ultimately WHO declared an epidemiologically emergency and that developed into global health crisis leading a huge socioeconomic crisis. The rapidly growing worst condition complicated the already in substantial healthcare systems globally and more specifically in third world countries where hunger is more demanding than health (Jee, 2020). The limited resource and continuous lockdown situation destroyed the backbone of the economy of the victimized countries, especially those who had made great tread in improving and upgrading their health care system (Mahase, 2020).

The general population. Furthermore, social distancing, quarantine, and self-isolation like measures were established to keep yourself safe from the virus, and literally they worked as the countries followed these guidelines strictly, succeeded to take over the spread of the virus in community to a greater extent. Along with healthcare practitioners and governing bodies, and electronic media, SMS services, mask distributing campaigns, WhatsApp messaging played well to make the people aware regarding facts about disease and prevention as well (Ni, et al, 2020). Nevertheless the parallel and co-morbid fear of the virus provoked anxiety and stress that not only made the nerves fragile, however uncertainty that what could happen was overwhelming and emotionally intolerable. Public health actions to reduce the spread of COVID-19, such as social distancing, made people feel lonesome and inaccessible whereas social gatherings help for coping with stress, a further feeling of feel affection for and care strengthen individual and a stronger community is developed (Hussain, et al, 2020).

Thousands of such cases were reported of fatality of all family and friend circles due to the exposure of viruses with one individual (Hamid, Mir and Rohela, 2020).

The mass fatal facts about virus majorly caused worsening of chronic health and augmentation of mental health conditions leading to post-traumatic stress disorder (PTSD), that usually develop due to the possible exposure to remarkably intimidating or horrific events that has also revealed by the research that pandemics are more accountable to develop PTSD symptoms among general population and healthcare practitioner as well and that can be commanded
through optimistic and encouraging coping approach (Aida Mehrad, 2020, Forte et al., 2020, Wang et al., 2020). A research outcomes, conducted in China during the current COVID-19 to study the associated factors with post-traumatic stress among of nurses exposed to the disease corona virus in 2019, confirmed the fragility of psychological strength and was found to be reduced by counseling and strengthening the mental approach (Liu, et al., 2020, Vittori, et al., 2020). According the another study carried out among Italian population regarding COVID-19-PTSD, stress symptoms were observed with high frequency and Psychological intercession to diminish mental, was established essential as consequent to the COVID-19 pandemic. The figured out picture confirms the co-morbidity of current COVID-19 pandemic situation with fear leading to anxiety and stress, and that influenced the normal human life like social and trade activities and highly disturbed the running academia and the most important impact of pandemic was observed on healthcare practice (Ran, et al, 2020). As trepidation of virus among population was very high-pitched during pandemic due to it’s highly contagious nature and transmittance of pathogen through unpredictable sources specifically from direct expulsion of droplets via coughing, sneezing, and vocalizing. Nonetheless, furthermore the fear of being victim had become more apprehensive due to the liberal substantiation of the persistence of infectious moiety on non-living surfaces for several hours (Li, et al., 2020). The possibility of virus remaining doable and catching in aerosol leading to airborne transmission can occur moreover close-socialization. Certainly, reasonable verification exist about the airborne transmission of corona virus due to its diligence into aerosol droplets in a functional and pathogenic type and sometimes diffusion in closed environment may occur even up to ten meter distances from the secretion source (Dai, et al., 2020, Resmi et al, 2020). In Wuhan, collected air samples from different hospitals showed the presence of fatal virus in air and even in surrounding areas, enough to confirm airborne mean an important way for the dispersion (Bi et al., 2020).

All the facts regarding exposure of virus, public distancing, air transmittance made the situation more worsted, and that all consequently produce impact negatively on routine healthcare practices of community like clinic visits for usual and often ailments, scheduled consultancy, vaccination, regular check up by physicians causatively entire such activities prohibited during the pandemic COVID-19 and that situation encouraged “SELF MEDICATION”, the practice of
being treated yourself or your family without opinion from any healthcare practitioner (Bogush, 2020).

The phenomenon of self medication was observed widespread and highly adaptable in different community either of gender and age. Many studies have been conducted on the issue and established and stamped this activity a malpractice with excellent suggestions and promotions of different such as awareness campaigns, medical camps, low cost consultancy and other healthcare facilities (Ran, et al, 2020). But unfortunately most of them do not fulfils the SOPs and criteria essentially required for the current pandemic situation to prohibit the exposure to corona virus as all mentioned activities vanish out the guidelines for isolation, social distancing, however can enhance the interactions may be with virus carrier as well. Due to the same dealings with consultancy and clinic visit that one should have to expose with virus itself, or it’s carrier, so else the existence in air as droplet may become a strong source of transference, and all end into a positive accumulation of virus in body through either source. Accordingly, all precision direct population towards the practice of self medication as a survival of fittest or as the safe tool to cure and treat either of getting into a life threatening or fatal condition after exposure to corona pathogen (Rahmawati and Bajorek, 2017).

The present study is designed to analyze the adaptation of self medication practice among general population on the basis of fact something is better than fatal thing, means that instead of being badly ill or exposed to corona virus, rather good to be self administered and self managed. However consumption of medicines without a prescription or doctor’ opinion. However the practice is elicited by various aspects as like the easy access and availability of drugs with or without prescription. In spite of bitter fact and awareness the population adapted self care during pandemic (Rahmawati and Bajorek, 2017, Ebrahimi et al., 2017)

The designed cross-sectional aimed to investigate the involved factors and motives of self-medication among general population all through the COVID-19 pandemic. The objectives of the study included to evaluate the pervasiveness of self-medication during specific outbreak period according to different socio demographic dimensions and further more the occurrence and possibility of resulted side effects, preventive measures and available resources were also counted after self care adaptation. It was foresaw that the study outcomes would establish the
self medication not an excellent rather a supportive and significant tool for the self well-being during the contagious and pandemic.

Method:

1. Study Design:

The present larger study was conducted in Pakistan during COVID-19 pandemic. The study population consisted of 920 inhabitants that practiced in the self health management for general diseases throughout pandemic. An online thirteen point questionnaire on was developed on Zenodo-scale and circulated among different groups of general individuals via Whatsapp, Messenger, and e-mail. until the required sample size was achieved. The shared questionnaire was kept anonymous to ensure confidentiality and trustworthiness. The study period was from March to August 2020.

2. Data Anthology:

The developed questionnaires enclosed sociodemographic characteristics of respondents like age, gender and profession. The required questions were focused on the frequency and likelihood of adaptation intended for self-medication during the outbreak. Other queries were about having any chronic disease, the possible side effects due to self medication and the method of monitoring.

3. Data Analysis:

The collected information and figure were encapsulated using descriptive and inferential statistics that were portrayed through tables, graphs, percentages, and cross-tabulation. Further Collected data was scrutinized by means of the Statistical tool, IBM SPSS Statistics Version 26. Pearson Chi Square and Fisher's Exact Test were used to determine factors affecting individual's desire to opt to self-medicate during the pandemic. Associations with p < 0.05 were deemed significant.
4. Inclusion & Exclusion Criteria:

The study was designed to focus the adult and teenaged individual of both genders; however children and old aged were kept exempted. Furthermore pregnant women were not included in the study as well.

Results:

1. Socio-demographic values of study:

The study was targeted to collect 1000 respondents, but approximately 92% (n = 920) questionnaires were responded. The survey was answered by general population of both genders, female (n=740) 80.4 %, male (n=180) 19.6%, however (n=754) 81.9% were adult and (n=166) 18.0% of teenaged. Regarding the profession employed participants (n=123) 13.3%, housewives were (n=222), 24.1%, self employed (n=42), 4.5% and students were (n=533) 57.9% (Table-1).

2. Prevalence and reported reasons for self-medication:

The study outcomes showed the frequency of fall in ill (n=394 ), 62.9% and 19.1% (n=120), once and twice more prominently during COVID pandemic and interestingly among overall population (n=684) 74.3% avoided and refused the doctor visit and 25.7% (n=236) opted the choice thus consequently jeopardy adopted self medication as among 754 adults (n= 508) 67.3% whereas among 166 teen aged (n=78 ) 46.9 % was found in favor of self medication. Regarding profession, students (n= 355) then housewives (n= 126) were at high rate for in favor of self management. According the data among those who fell ill once (n= 626) in COVID-19(n= 394) 62.9% did not visit for consultancy and avail self medication even twice illness of n=168, (n=120) 71.4%, treated themselves through self medication. The respondents were also solicited concerning the conditions that imposed self-medication. Approximately Beside sufferings like skin allergy, rhinitis, diarrhea and other most prominently the symptoms appeared of flu/ cough in n=395, and among them (n=281) 71.1% preferred self treatment whereas n=238 caught fever during COVID-19 and among them n=150, 63% got self treatment (Table-2).
3. Health status and clinic visit Record:

In the response of query about having any disease approximately (n=514) 55.8% participants were found to have no disease like diabetes, hypertension, allergy, digestive disorders and others. However the positive responses for self treatment was amassed from the participants having disease specifically diabetes, allergy and digestive disorders as they even avoided the scheduled and routine consultancy and visit due to the alarming trepidation of infection and maximum exposure with virus and the data showed significant relation between the two variables according to the Chi square was estimated significant (0.000, less than 0.05) as the scheduled visits were ignored by the population, even by whom those health life and disease management is highly essential and bound with proper and timely advice of doctor or physician.

A very strong significant correlation was observed between the limited scheduled visit due to possible exposure of corona virus and adaptation of self medication among instead of visiting for consultancy, with p-value obtained 0.000 (less than 0.05) from both Pearson Chi-square and Fisher’s test. According the analysis a very deep correlation linking regular, often, required consultancy, visit and the self medication as 0.000 from Fisher Exact test that enough strong evidence of fear of going hospital and regarding of clinic visit leading to adaptation of self medication during COVID-19 more frequently as compared to normal healthy period that is before COVID period (Table-2).

4. Impact of Self Medication side effects:

The best conclusion was that the negligible side effects of this practice were observed in the study. During the COVID-19, the present study outcomes revealed the self medication with high jeopardy and amazingly 72.1% population opted the practice safe and helpful and 29.9 % considered risky and harmful. However, Significant valve of Fisher’s Exact Test, 0.00 (less than 0.05) was established while analyzing the correlation between the opinion and experience about self medication and preference to opt instead of doctor visit. The occurrence of side effects was observed 15% side effects whereas 85% participants did not feel any kind of unpleasant come across with the practice. The more prominent side effects were drowsiness, dry mouth, stomach ache among a small size of population and 24% population stopped the self management medicine, while others managed the unpleasant effects through different measures as like home remedies, increased water intake, monitored by lowering dose or others (Table-2).
Discussion:

State of affair decides and creates impact on human psychology and associated behavior. The uncertainty leading to anxiety and apprehension has been observed in different global outbreak like ebola, SARS and now with high intensity in COVID-19 as well (Al-Hazmi, 2016, Holmes et al., 2016). Such threats hinges on the decision and priorities that in turn alters the life style. In current pandemic social distancing (Carvalho Aguiar Melo and de Sousa Soares, 2020) and isolation that consequently worked in different way and adaptation due to a threatening and alarming circumstances around the globe and that isolation strategies, giving up tour plans proved to be a successful prevention to reduce the spread of the pathogen in communities all over the world (Ahmed et al., 2014, Jafari, Khatony and Rahmani, 2015.). The “stay at home” strategy and long term isolation guidelines impeded the population to visit hospitals and clinics either regular or often and moreover to prohibit the possible exposure to corona virus. All the uncertain conditions directed towards the option of self medication hence altered the health care taking. The pandemics are equally responsible for encountering negative impact. Along with socioeconomic disturbances, psychosocial state and mind power has been influenced specifically of the victim, people around the victim and non victimized as well (Armando, 2020). In short the whole community subjected itself towards self treatment as reaction of panic of contagious virus (Ahmed et al., 2014, Lippi, Gotuzzo and Caini, n.d.). As the virus has been established deadly with having no mercy even for pregnant women and death may occur and high chances of transference of pathogen directly foetus (Milne et al., 2020,Özdemir, 2020).

These all facts and figures about the corona virus had made the situation highly terrifying and directed the community to avoid the exposure to the virus at any cost and this preventive measure enhanced the self treatment (Schwartz, 2020, Setti et al., 2020). The present study is focused to portray the factors and outcomes of opting self medication by the general population in current outbreak of the coronavirus SARS-CoV-2 (Hamed, 2020, Matias, Dominski and Marks, 2020).

In present study the general population of sample size 920 was studied through a 13 point questionnaire was asked to response and that was further analyzed through IBM SPSS Statistics Version 26. The majority of male gender (74.7%) was found to adopt self medication specifically...
adults as compared to teen aged and very strong association was found between self medication and age, the prevalence has been proved by the other studies as well elderly persons are more prone to self medication in regard to over-the-counter drugs and other alternative medicine (Mortazavi et al., 2017). Elderly persons have more confidence to utilize old prescription and to rely the opinion from friend and family circle, hence that confidence worked more in COVID-19 to follow self-medication practice as a first line of treatment, to avoid the consultancy (Guo et al., 2020, Singh et al., 2020). The similar pattern was observed among the professionals who have self business set up, with high jeopardy as significant correlation was estimate from Person Chi square and different factors may affect the practice among such population size as drug buying consider cheaper than consultancy fee and the more frequency of the self medication practice was observed due to economical downfall that globally faced during pandemic because of complete and partial lock down (Junejo et al., 2020, Su et al., 2020).

The ailments and disorders are the fact of normal human life and sometimes work to boost the immunity as via interaction of different pathogens (Sharma, 2020, Banerjee and Rai, 2020). According to the feed back among target population, majority fell ill once time during study period and significant relation was shown with the self medication practice specifically and considerably relevant with cough and flu, being the initial symptoms of corona virus, were treated by self (Ali and Alharbi, 2020, Hsih et al., 2020). Moreover the majority had no previous history of any disorder like diabetes, allergy, digestive problems (Khalangot, 2020) and showed positive with the self management practice to avoid hospital and clinic visit. All the scenario and opinion favored self medication and was observed to be supported though strong and positive association (0.000, p<0.05), that all are the consequences of dread from exposure to corona virus more likely from hospitals and interaction with pathogen carrier (Arora and Grey, 2020, Makridis and Wu, 2020). The avoidance of hospital visit was probably also due to the accessibility of opinion from family and friend health care practitioner including doctor, nurse and pharmacist and 67.7% of population was found to have such facility that can provide treatment to some extent however cannot be positioned the proper consultancy of physician or a doctor. Interestingly the opinion regarding side effects of self medication was observed very negligible and was found to manage through different means like home remedy, dose monitoring, hence showed positive relation with self medication as the general undesired effects
were reported like nausea, drowsiness, dry mouth from few population (Ali Hassan et al., 2020, Gualano et al., 2014). Analgesics were the most preferred medicines observed during COVID, but antibiotics, anti-allergy medications, and cough syrups were utilized as well for self management. The outcome shows that side effects may be due to the associated psychological factors of taking medicine that was seemed to be decline before the fear of deadly pathogen exposure.

**Conclusion:**

After discussing and looking into the frequency and factors involved in the high adaptation of self-medication during the COVID-19 pandemic as the substitute treatment, it has been concluded that although the practice had not been proved momentous nevertheless greatly accepted to evade of the pathogen as the present study reveals the strong significance of all parameters. Just because in the present situation the population directs themselves to reduce the risk factors likely to occur. The brain takes away the body from the source of fear and human psychology works to act for other options as self-medication that was plumped for as the “survival of the fittest” in the current pandemic and isolation. The present and upcoming chaos demand appropriate construct online healthcare system, online clinics, provision of timely, proper medicine, and related material in order to develop perceived barriers for reducing the further strengthening of such practice.
References:


Table 1: Socio-demographic characteristics of respondents during COVID-19 outbreak

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>740</td>
<td>80.4</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>180</td>
<td>19.6</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td></td>
<td>754</td>
<td>81.9</td>
</tr>
<tr>
<td>Teen aged</td>
<td></td>
<td>166</td>
<td>18.0</td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td></td>
<td>123</td>
<td>13.3</td>
</tr>
<tr>
<td>Housewife</td>
<td></td>
<td>222</td>
<td>24.1</td>
</tr>
<tr>
<td>Self employed</td>
<td></td>
<td>42</td>
<td>4.5</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td>533</td>
<td>57.9</td>
</tr>
</tbody>
</table>
Table 2: Adaptability Analysis of SELF-MEDICATION During COVID-19 Outbreak

<table>
<thead>
<tr>
<th></th>
<th>Pearson Chi Square Value</th>
<th>Asymptotic Significance</th>
<th>Fisher's Exact Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group</td>
<td>24.451(^a)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Profession</td>
<td>8.052(^a)</td>
<td>0.045</td>
<td>NA</td>
</tr>
<tr>
<td>Number of times you fell ill during Covid-19 (March 2020-August 2020)</td>
<td>7.801(^a)</td>
<td>0.05</td>
<td>NA</td>
</tr>
<tr>
<td>What kind of disease you suffered from</td>
<td>33.355(^a)</td>
<td>0.000</td>
<td>NA</td>
</tr>
<tr>
<td>Did you avoid going to the clinic/hospital due to Covid-19</td>
<td>67.471(^a)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Did you have any ailment/disease</td>
<td>53.406(^a)</td>
<td>0.000</td>
<td>NA</td>
</tr>
<tr>
<td>Did you avoid or limit your scheduled/routine visits to clinics/hospitals due to Covid-19</td>
<td>122.125(^a)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Your opinion for opting self-medication during Covid-19</td>
<td>180.417(^a)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>If yes did you feel side effects after self-medication</td>
<td>69.573</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

(Additional data and cross-tabs in Supplementary Online Tables)