Psychological influence of internet on self-medication among undergraduate students at a university in Oyo state, Nigeria

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Abstract — This study examines the psychological influence of the internet on self-medication among Undergraduate Students at a University in Oyo State, Nigeria. The descriptive survey that is correlational with the total population that consisted of all the students was used. A multi-stage sampling technique was used to select 200 students from 10 departments in five faculties at a University in Oyo State, Nigeria. The information was collected and analysed with a simple percentage and mean. Pearson Product Moment Correlation to check the hypotheses at $p < 0.05$ significant level. The results show the rate of self-medication to be moderate and that internet contributed to self-medication among students. However, the results did not show a significant correlation between the internet and self-medication ($r=0.152$, < 0.292; $p\ 0.05$), while a significant relationship exists between the level of knowledge and self-medication ($r=0.310$, > 0.029; $p\ 0.05$). This study concluded that the internet influences self-medication. Therefore, it is recommended that students avoid getting prescriptions from the internet.

Keywords: Internet, Self-medication, Over-the-counter drugs, Undergraduate students, Prescription error, Prescription misinterpretation

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I. BACKGROUND TO THE STUDY

SELF-MEDICATION (SM) is a choice to administer medications without properly diagnosed ailments or symptoms (Naseralallah, Stewart, Ali, & Paudyal, 2022). This emanates from self-care, which is naturally an act done for oneself to sustain life and prevent health hazards. The instinct for the preservation of life is a propelling force that makes people indulge in self-treatment devoid of proper medical consultation. Akande-Sholabi and Akinyemi (2023) expressed self-medication as the consumption of medicine without the recommendation of a qualified medical doctor or pharmacist for both diagnosis of symptoms and or cure. This is a worldwide occurrence among the old and young (Mustafa et al., 2023). This health-related decision occurs in the normal social context of everyday life (Hernandez, 2022).

The habit of self-medicating could occur when there is a history of prior acts of treating similar illnesses or when there are no health-care personnel on the ground. This could result in incompatible drug use, prescription error, drug misinterpretation, drug-associated complications, and hindered health care. Also, it escalates pathogen resistance, incorrect diagnosis, wrong prescriptions, and wrong management and duration of use (Mekuria et al., 2021).

There are two sides to a coin since indirectly, self-medication has considerably impacted mental health, as taking charge of one's health, when correctly administered, minimises the pressure on medical services. It shortens the waiting time while waiting for medical attention, easing the weight on health-care expenditures. It has helped to improve knowledge of medicines and supported the effective use of the health care system, especially in the developing world. While the internet can be a valuable tool for accessing health information, it is essential to recognize its limitations and potential risks. The most readily abused medicines are analgesics and antibiotics. Several factors are linked to the inclination to self-medication by different people (Abdelwahed et al., 2023).

Possible dangers in using Over The Counter (OTC) medicines for self-determined symptoms (Quispe-Cañari et al., 2021) come with unforetold possibilities. Procuring and ingesting self-medication leads to inappropriate use (Mohammed, Hamed, & Kresha, 2022). Self-medicating (on non-prescribed medicines) could bring about an escalation in antimicrobial resistance (AMR) rates, high morbidity, and mortality (Founou, Blocker, Noubom, Tsayem, Choukem, Dongen, Founou, 2021). Particularly is the excessive administering of medicines over a prolonged period of and use of expired medications, drug interactions, and other possible circumstances that can lead to poisoning/toxic and drug-associated dangers of inappropriate use of medications.

The COVID-19 pandemic also contributed to the increased awareness of health consciousness in its wake (Tekeba, Ayele, Negash, & Gashaw, 2021). The morbid fear of contracting COVID-19 increased medicating without due consultations, even among health workers (Aldhamin & Al Saif, 2023; Mustafa et al., 2023). This, though preventable, saw an increase in morbidities owing to adverse drug reactions (ADRs) and amplified interactions of drugs combined with the concealing of some symptoms (Okoye et al., 2022).

The advent of the internet revolutionized the approach to health-care. The Internet created access for self-diagnosis irrespective of illnesses with ready-made remedies. The array of online health-related information makes confidence and empowers with the knowledge to

diagnose and treat health issues. The growing trends of self-medication with internet (Rocha, de Moura, Desidério, de Oliveira, Lourenço, & de Figueiredo Nicolete, 2021) over the years has been of great concern regarding the ease at which information is extensively available on every related health-care issue. Taherdoost (2023) submitted that there have been significant developments in wireless communication and interconnectivity. The Internet allowed erudite and resourceful platforms to communicate diverse transmission of unwavering information regardless of the geographic area (Mishra & Pandiya, 2021; Stewart, Madonsela, Tshabalala, Etale, & Theunissen, 2022).

The improper use of health-related information sourced from the internet has crystalised into an emergent tendency to engage in unendorsed self-medication without considering the possible side effects of such drugs (Agarwal, Agarwal, Agarwal, & Sharma, 2021). The quality of information sourced depends partly on accessibility to the internet and the availability of funds. Nonetheless, there is unease amongst specialists about the use of the internet by more people to make a diagnosis of and to proffer solutions to their health issues through self-medication, which is possibly a misinterpretation and wrong use of information (Joseph et al., 2022). This could be related to partial or total absence of health knowledge. Yang et al. (2022) stressed the need to tackle and control the health gap created by covid-19.

The psychological influence of the internet on self-medication among university students is a concerning issue that warrants attention. Self-medication can undermine a student's self-efficacy and resilience, so instead of learning healthy coping mechanisms, these students use SM to manage stress and anxiety. The implication is that they eventually get trapped in the web of avoidance and denial. For an undergraduate student, it could be a fast and easy escape from stress and other mental health-related issues. There is a graduation from popping a few painkillers to numb and deaden the effect of examination hangover or downing a few drinks to forget a break-up in a relationship. Self-medication can seem a simple and harmless way to cope with life's challenges.

Since university undergraduate students increasingly depend on sourcing health-related information from the Internet, it becomes imperative to address the psychological factors behind self-medication. First, the distance from the residence to the clinic, that is, the accessibility to medications from chemist's shops and pharmacies, poverty is perceived to be complicated nature of the health complaints (Abdelwahed et al., 2023). Second, in some cases, increased illiteracy and half or no exposure to homeopathic information is another factor. Agarwal et al. (2021) revealed that most individuals use self-medication when they have minor complaints, while about 11.6% of their findings are self-diagnosed and self-medicated for severe illnesses. Third, the influence of others emanates from claims of the potency of the medicines used fuelled by the high level of ignorance of medical implications and triviality of approach towards illnesses. Fourth, economic insecurity coupled with the high-cost factor poses a significant contributing factor in most cases. The educational level, unobstructed access to therapeutic information, and health needs consciousness are noteworthy.

In summation, the ease of access to the vast medical information on the internet can influence university students to engage in self-medication practices. The plethora of information that is accessible on the internet most times paints the illusion of self-sufficiency and encourages individuals to take charge of their health themselves. So, this readily available information portends misinformation and inappropriate medication use (Naseralallah et al., 2022). Also, the facelessness of the internet space allows university students to search for medical advice online rather than consulting a health professional. This creates a significant risk, as misinterpretation could lead to misdiagnosis, inappropriate treatment, and potential health complications. This consequently results in the need for greater psychological awareness of self-medication as relates to online information sources. The study intends to examine how the internet has influenced obtaining health information and self-medicating habits among undergraduate students.

II. PROBLEM STATEMENT

Some factors are associated with the seemingly innocent act of self-medicating, including drug resistance and interactions and complications encountered during high-risk medical interventions. Another risk factor is a wrong diagnosis leading to an under or required dose of drugs coupled with the danger of using expired drugs and or protracted usage of drugs. There are cases of using search engines to diagnose health challenges and provide solutions to personal health issues. The danger accompanying self-medication is shrouded in factors like psychological and mental health concerns, which can culminate in using and becoming dependent on drugs as an elixir to cope with academic challenges and associated stress.

The resultant complications include misdiagnosis, drug resistance, excessive use, ingestion of expired drugs, protracted and undue use duration, poisoning and toxicological risks, and incidence of drug interactions. It is an understatement to say that it is concurrent with harmful effects on the psychological state, quality of life, mental health, and, above all, the academics of the students involved.

The implications of the ignorance of the dangers associated with self-medication and the inability to seek medical assistance (due to lack of funds to procure medications) are enormous, as addiction and drug resistance are major reference points in misuse and abuse. This could culminate into serious psychosomatic and health hazards, which inadvertently disrupt academic pursuit and increase academic under-achievement, anxiety, and poor quality of life. Hence, this study explores the psychological influence of the internet on self-medication among undergraduate students.

III. OBJECTIVES OF THE STUDY

The study examined the psychological influence of the internet on self-medication among undergraduate Students. It specifically evaluated the rate of self-medication among Undergraduate Students at a University in Oyo State, Nigeria. It examined the internet's contribution to their self-medication and the level of knowledge on self-medication.

IV. HYPOTHESES OF THE STUDY

H01: There is no significant relationship between internet and self-medication among Undergraduate Students at a University in Oyo State, Nigeria.

H02: There is an insignificant relationship between Knowledge of self-medication and self-medication among Undergraduate students at a University in Oyo state, Nigeria.

V. METHODS

Research Design

This study employed a descriptive survey research design, which precisely depicts the obtainable situation. The population include all undergraduate Students at a University in Oyo State, Nigeria. The sample was taken using a multi-stage sampling technique; five out of sixteen faculties were selected using a stratified sampling technique. Five departments from the sampled faculty were selected using a simple random sampling technique, and ten students were each selected from the sampled departments. The sample size was fifty (50) respondents.

Data collection method

This study used a self-structured questionnaire called the Influence of Internet on Students Self-Medication Questionnaire (IISSMQ) for data collection. The self-structured questionnaire, "Influence of Internet on Student's Self-Medication Questionnaire (IISSMQ), was used for data collection. Section (A) provided demographic information of the respondents (students), while Section (B) contained items that measure the rate of Self-medication, Level of knowledge of Self-medication,

internet as a contributing factor for Self-medication and the relationship between internet and Self-medication. One example of the items is, "I sometimes watch videos on YouTube to get medications for any illness".

The questionnaire has a 4 Likert scale that ranges from Always, Most time, Often, Rarely, and Strongly agree to Strongly disagree. While Strongly Agree attracts 4 points, Agree is allotted 3 marks, Disagree 2 points, and Strongly Disagree attracts 1 point. Also, a range of Right, Wrong, and Uncertain Simple percentages, mean and standard deviation, and Pearson Product Moment Correlation was used at a 0.05 significance level. A pilot study was conducted on ten students from another department who were not part of the study. The data collected was tested using the Cronbach Alpha tool that yielded r =0.73 at 0.05 significance level, showing that the instrument is highly reliable. The result determined the level of reliability of the instruments and their validity.

Simple percentage, mean and standard deviation, and Pearson Product Moment Correlation were used at 0.05 significance. A pilot study was conducted on ten students from another department who were not part of the study. The data collected was tested using the Cronbach Alpha tool that yielded r =0.73 at a 0.05 significance level, showing that the instrument is highly reliable. The result determined the level of reliability of the instruments and their validity. There was a hundred percent retrieval of instruments administered.

Data analysis

The data collected was then analyzed with simple percentage, mean and standard deviation, and Pearson Product Moment Correlation at 0.05 significance level.

VI. RESULTS AND DISCUSSION

Rate of self-medication among Undergraduate Students at a University in Oyo State, Nigeria

Table 1: Rate of self-medication among undergraduate students

Items	Always (N/%)	Most time (N/%)	Often (N/%)	Rarely (N/%)	Mean	Std. Dev
When I feel ill, I go to drug shops and buy drugs to use.	7 (14)	36 (72)	7 (14.)	0 (0.0)	3.0	0.5
When I fall sick, I use leftover medicines from earlier prescriptions for treatment.	0 (0)	21 (42)	0 (0.)	29(58)	1.8	1.0
Buying medicine from the advice of friends.	0 (0)	15 (30)	14 (28)	21 (42)	1.9	0.8
How often do you use drug you have at home before going to the hospital.	0 (0)	21 (42)	7 (14)	22 (44)	2.0	0.9
Use the previous prescription to buy drugs.	7 (14)	15 (30)	7 (14)	21 (42)	2.2	1.1
Average Mean	2.2					

The findings show that the majority (86%) of respondents buy drugs at drug shops to use when they are ill (Mean =3.0, S.D = 0.5); also, most (58.0%) respondents rarely retain drugs from previous prescriptions to treat their self when they are sick (Mean =1.8, S.D = 1.0). The findings further show that the majority (42.0%) of the respondents rarely buy drugs from the advice of friends (Mean =1.9, S.D = 0.8), and the majority (44.0%) rarely used the drug they have at home before going to the hospital (Mean =2.0, S.D = 0.9). Most (42.0%) respondents rarely buy drugs from previous prescriptions (Mean =2.2, S.D = 1.1). The findings show that their self-medication rate is moderate because the average mean of 2.2 is lesser than 2.5, which is the decision rule. Agawaral et al. (2021) supported these findings as the respondent's presented family and friends influence (34.3%) as the most common reason for self-treatment of self-diagnosis. This aligns with Mohammed et al. (2022) on self-medication and factors associated with self-medication.

Internet contributing to self-medication among Undergraduate Students at a University in Oyo State, Nigeria

Table 2: Contribution of the internet to self-medication among Undergraduate Students at a University in Oyo State, Nigeria

Items	SA (N/%)	A (N/%)	D (N/%)	SD (N/%)	Mean	Std. Dev
The use of internet is a confirmed substitute to seeing or consulting a specialist	7 (14)	29 (58)	7 (14)	7 (14)	2.7	0.9
Interment is helpful in getting drugs for some illness	7 (14)	22 (44)	14 (28)	7 (14)	2.6	0.9
I sometime watch videos on You tube to get medications for any illness	0 (0)	7 (14)	14 (28)	29 (58)	1.6	0.7
Using the internet to self-medicate increases associated dangers of drugs side effects.	29 (58)	14 (28)	7 (14)	0 (0)	3.4	0.7
Student always get health information on internets	36 (72)	14 (28)	0 (0)	0 (0)	3.7	0.5
Average Mean	2.8					

Table 2: The result shows that 72.0% (Majority) of the students agreed they always get health information online. It indicates that they substituted the Internet for doctor consultations. With a Mean of 2.7 and S.D = 0.9, 58.0% (majority) of the students believe that internet helps them get some drugs without any doctor's guidance. The result further revealed that 86.0% (Majority) of the students disagreed that they sometimes watch videos on YouTube to get medication for their illness (Mean =1.6, S.D = 0.7). More so, the finding shows that the majority (86.0%) of the students agreed that usage of internet for self-medicating increases the dangers of side effects of drugs (Mean =3.4, S.D = 0.7). About 100.0% of the students agreed that they always get health information on the internet (Mean =3.0, S.D = 0.5). This is in tandem with the submission of Agarwal et al. (2021) since 23.2% assume that the information sourced from internet is not without risk. About 21% gave reasons why they believe that using internet is a substitute for accessing specialist assistance. Google Sites was the most common search engine (93.8%) used. The internet's health-related information was observed to be very good by 43.7%. From the findings, it can be inferred that the internet contributed the average mean of 2.8, which is higher than the decision rule set at 2.5. HaddadPajouh, Dehghantanha, Parizi, Aledhari, and Karimipour (2021) and Sadhu, Yanambaka, and Abdelgawad (2022) corroborated the influence of internet in their study on internet of Things, especially areas concerning security and solutions. Stewart et al., (2022). Findings also align with misinformation on social media and the users' responses in confronting digital COVID-19 in Africa.

Level of Knowledge of self-medication among Undergraduate Students at a University in Oyo State, Nigeria

Table 3: Level of Knowledge of Self-medication among Undergraduate Students at a University in Oyo State, Nigeria

Items	Right (N/%)	Wrong (N/%)	Uncertain (N/%)	Mean	Std. Dev
Fundamental knowledge of drug action is required.	43 (86)	7 (14)	0 (0)	2.7	0.7
Drugs not prescribed could cause certain adverse effect or death.	28 (56)	7 (14)	15 (30)	2.1	1.0
Drugs resistance could occur because of using drugs not prescribed.	40 (80)	3 (6)	7 (14)	2.9	0.4
The reading and understanding of leaflets in the drug pack is important before taking medicine.	41 (82)	2 (4)	7 (14)	2.7	0.7
Continuous use of Nonprescription drugs may cause dependency.	43 (86)	0 (0)	7 (14)	2.7	0.7
Average Mean	2.6				

The results show that 86.0% (Majority) of the respondents thought that Non-prescription drugs require basic knowledge about drug action (Mean =2.7, S.D = 0.7), also 56 (Majority) of the respondents revealed that Non-prescription drugs could lead to some adverse effect or cause death (Mean =2.1, S.D = 1.0). Furthermore, the findings show that 80.0% (Majority) of the respondents agreed that non-prescription drugs can lead to body resistance to drugs (Mean =2.9, S.D = 0.4). More so, 82.0% (Majority) of the respondents opined that reading leaflets accompanying the medicine packet is important before ingesting (Mean =2.7, S.D = 0.7). The outcome also indicates that 86.0% (Majority) of the respondents agree that continuous use of Non-prescription drugs may cause dependency (Mean =2.7, S.D = 0.7). From the findings, it can be deduced that the level of knowledge of self-medication among the respondents is high because the average mean is higher than the decision rule. This is tandem with the submission of Akande-Sholabi, Ajamu and Adisa (2021), who found that undergraduate pharmacy students have more knowledge of self-medication than nursing students. The submission of Naseralallah et al. (2022) on factors contributing to the level of knowledge of self-medication aligns with these findings.

Hypothesis 1

There is no significant relationship between the internet and self-medication among undergraduate students at a University in Oyo State, Nigeria.

Table 4: Relationship between Internet and Self-medication of Undergraduate Students

Variable	N	Mean	Std. Deviation	r	p	Remark
Internet	50	14.02	1.857	0.152	0.292	Not Significant
Self-Medication	50	10.86	3.044			

Table 4 presents the analysis of the relationship between the internet and self-medication among Undergraduate Students at a University in Oyo State, Nigeria. The result shows no significant relationship between internet and self-medication among Undergraduate Students at a University in Oyo State, Nigeria. (r=0.152, < 0.292; p 0.05). The results showed that internet has no significant influence on their self-medication. Therefore, the hypothesis is accepted as nil. The alternate stated a significant relationship between the internet and self-medication among Undergraduate Students at a University in Oyo State, Nigeria. This is a fallout from sourcing information on health-related issues without medical consultation, which ultimately causes reliance on the internet for medication (Sun, Li, Song, & Xia, 2021). The findings of Takeba et al. (2021) align with this perspective that the rate at which the patronage of community Pharmacies increased during the COVID-19 pandemic shows dependence on self-medication.

Hypothesis 2

There is no significant relationship between Knowledge of self-medication and self-medication among Undergraduate Students at a University in Oyo State, Nigeria.

Table 5: Relationship between Knowledge of Self-Medication and Self-Medication among the Undergraduate Students

Variable	N	Mean	Std. Deviation	r	P	Remark
Level of Knowledge	50	13.14	2.748	0.310	0.029	Significant
Self-Medication	50	10.86	3.044			

Table 5 analyses the relationship between the level of knowledge of self-medication and self-medication among undergraduates. The result shows a significant relationship in the level of knowledge of self-medication among Undergraduate Students at a University in Oyo State, Nigeria (r=0.310, > 0.029; p 0.05). Therefore, the hypothesis was rejected (null hypothesis), while the alternate hypothesis on self-medication was accepted. The hypothesis now reads there is a significant relationship between the level of knowledge of self-medication and self-medication among Undergraduate Students at a University in Oyo State, Nigeria. These lend credence to the findings of Akande-Sholabi and Akinyemi (2023) on consumers' basic knowledge of Over-The-Counter drugs and their identification. They submitted that just about 50% of the consumers who took part in their study showed an impressive knowledge of these drugs and that not reading the information contained in the drug leaflets before ingesting OTC drugs could result from the absence of leaflets in the packet. The submission of Naseralallah et al. (2022) further aligns with these findings based on factors that instigate and propel the act of self-medication.

VII. CONCLUSION

The use of drugs has both positive and negative benefits as it could both heal and, at the same time, cause serious harm or damage. The practice has gained grounds as a central element of health care and enlightening systems all over the globe. The advent of the internet has further fuelled students' engagement in self-medication. This has unavoidably increased the demand for non-prescription drugs. Since these students have internet access, they use it to source health-related information as a fallout.

The indifference towards the prescription of medicines could be attributed to long delays in the hospital. Also, it could be linked to inaccessibility to the university clinic as most procurements made by these students were done in stores not certified or accredited to vend medicines (especially antibiotics or analgesics). A shortage of quality medical attention and poor professional control of pharmacological products cause reckless use of medications.

This points to the practice of self-medication as being concurrent with adverse psychological implications related to misdiagnosis, drug resistance, excessive usage and quantity, ingestion of expired medications, drug interactions, and other possibilities concomitant with inadequate use of medicines.

Recommendation

Based on this, community chemists have a key role in moderating non-prescribed drug use and discouraging self-medication. Proffering solutions to these identified practices require a manifold process. The community health education enlightenment would be for the students and the populace.

The Government, Pharmaceuticals, and Medical bodies should pioneer the advocacy and support the movement on the safe use of non-prescription medications with endorsed practice standards. Implementing existing laws that allow only certified stores to dispense medicines with prescriptions is pertinent.

To encourage more hospital visits rather than self-medicating, the waiting time spent in the hospital before medical attention is received must be reduced and up-to-date health facilities made available on the university campus.

Finally, the Community chemists need to moderate the use of non-prescribed drugs, specifically antibiotics and painkillers sold to these students.

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