Journal of Health Development
e2663-1776

Review

Exploring Self-medication Practices among University Students: A Public Health Perspective

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Received: October 12, 2025
Revised: November 28, 2025
Accepted: December 13, 2025
Published: December 24, 2025

Citation: Aknur Abilova, Zhanerke Bolatova. Exploring Self-medication Practices among University Students: A Public Health Perspective. J Health Dev. 2025, 60 (7), jhd045. https://doi.org/10.32921/2663-1776-2025-60-7-jhd045

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Abstract

In today's world, self-medication is becoming an increasingly common practice among young people due to the availability of medicines, lack of time to consult a doctor and lack of awareness of the risks of self-medication. This study aims to conduct a comprehensive scoping review of self-medication practices among university students, examining its frequency, contributing factors, associated health and academic consequences, and the effectiveness of existing prevention and intervention measures. A literature search was conducted in PubMed, Web of Science, and Scopus using keywords related to self-medication among university students. Of the 1051 articles initially identified, 91 were selected for inclusion following relevance screening. The literature review reveals that self-medication can lead to serious health and social problems such as the development of side effects, antimicrobial resistance, poorer general health, and decreased academic performance. In addition, existing strategies to prevent self-medication are reviewed, including improving health literacy, increasing control over the sale of prescription drugs, and developing accessible health counseling services. The results of the study showed that self-medication is still an unresolved public health problem, as evidenced by its high prevalence. Self-medication is influenced by the inconvenience of accessing health care as well as unhealthy behaviors associated with seeking health care. There is a need to improve access to quality health care and to promote good health-seeking behavior.

Keywords: self-medication, self-administration, students.

1. Introduction

Self-medication (SM) is a globally prevalent practice that transcends demographic boundaries, affecting individuals irrespective of gender and age. It poses a significant challenge to healthcare systems due to its widespread and often unregulated nature. Empirical data from various countries underscore the magnitude of this issue. In Brazil, the prevalence of SM is reported at 16.1%, with higher rates observed among women and individuals aged 20 to 39 years. In contrast, substantially higher prevalence rates are reported in Ghana (53.7%), the western region of Saudi Arabia (67.7%; 28.6% in men and 39.1% in women), Ethiopia (46.14%), and India (53.57%). Among students in France, the prevalence reaches 95%, while in the southwestern region of Nigeria, it stands at 85.4% [1–7]. This phenomenon is particularly pronounced in developing countries, where the accessibility and convenience of over-the-counter (OTC) medications facilitate unsupervised use, contributing to adverse health outcomes such as antimicrobial resistance.

SM presents a significant challenge to healthcare systems globally, often stemming from deficiencies in healthcare service quality and a growing mistrust of conventional medical practices [8]. Beyond its clinical implications, SM also imposes financial burdens on health systems. Although it is commonly employed for

minor ailments and is perceived as cost-effective on a per-episode basis, its widespread prevalence warrants concern, particularly for frequently encountered symptoms. For instance, a survey conducted among university students in Sri Lanka reported that 61.3% of respondents preferred to self-medicate for fever, while 56.7% did so for cough [9]. Similarly, in Saudi Arabia, headache was identified as the most frequent reason for SM, reported by 65.9% of participants [10]. Parallel trends have been observed in sub-Saharan Africa, where headaches and fever also constitute the leading reasons for SM [11]. Despite the apparent economic advantages, the cumulative effect of frequent, uninsured self-treatment can lead to considerable financial strain. Research conducted in rural Beijing indicates that SM expenses account for approximately 8% of total per capita healthcare expenditures—an amount comparable to that of inpatient care [12]. Furthermore, the absence of qualified medical supervision increases the risk of misdiagnosis, adverse drug reactions, and complications, thereby complicating subsequent treatment and undermining overall healthcare outcomes [13,14].

SM has emerged as a rapidly expanding global phenomenon. Prior research indicates that individuals frequently resort to SM to manage a range of minor health issues, including headaches, influenza, and dermatological conditions. This study aims to conduct a comprehensive scoping review of SM practices among university students, examining its frequency, contributing factors, associated health and academic consequences, and the effectiveness of existing prevention and intervention measures. Specifically, this review examines the extent of SM practices, underlying motivations, associated health and educational outcomes, and the current policy frameworks and regulatory mechanisms. Additionally, it seeks to identify critical gaps in the literature and practice, offering evidence-based insights to inform future research agendas, policy development, and the design of targeted interventions aimed at mitigating the adverse effects of SM within this key demographic group.

2. Methodology

A comprehensive analysis of publications related to SM was conducted. The literature search was performed using open-access scientific databases, including PubMed, Web of Science, and Scopus. The search strategy employed the following keywords: ("self-medication" OR "self-administration" OR "self-care" OR "illicit use" OR "self-prescription" OR "without doctor's prescription") AND ("university students" OR "medical students" OR "college students" OR "undergraduates"). This search initially yielded 1,051 articles. Following a preliminary relevance screening, 91 publications were selected for inclusion in this scoping review.

The screening process involved a two-stage assessment. First, titles and abstracts were reviewed to identify studies with potential relevance to the research objective. Subsequently, a full-text analysis was conducted to further assess eligibility. Studies were excluded if they did not meet the inclusion criteria, were not directly relevant to the topic, contained duplicate data, or lacked a complete article structure.

Inclusion criteria comprised:

- studies providing reliable data;
- research addressing the global prevalence of SM;
- analyses of the types of medications used;
- documentation of adverse effects, and evaluations of the associated risks and consequences.

No restrictions were applied regarding the study population or publication period, as the objective was to encompass a broad spectrum of evidence on the prevalence and drivers of SM practices.

3. Definition of self-medication

SM constitutes a multifaceted approach to personal health management, encompassing the use of both OTC and prescription medications, alongside self-care practices and preventive health behaviors, including lifestyle modifications. A study conducted in the United Arab Emirates among high school students reported that 89.2% of participants engaged in self-administration of both prescription and non-prescription drugs [15]. One contributing factor to this behavior is the common practice of retaining leftover medications following treatment, a trend particularly prevalent among students. For instance, research conducted among nursing students in the Castile and León region of Spain found that 85.72% of respondents admitted to storing unused medications after completing prescribed therapies [16]. These findings indicate that SM frequently involves not only OTC products but also previously prescribed pharmaceuticals, often used without professional consultation to address recurring or similar symptoms.

OTC medications play a central role in SM practices. These drugs can be obtained without a prescription, although their availability is regulated by country-specific legislation [17]. In several European nations, including Poland and Portugal, various OTC products are accessible not only through pharmacies

but also via supermarkets and general retail outlets, thereby increasing public access [18-20]. Similarly, in India, approximately 90.16% of prescription drugs, including antibiotics, are sold in conventional pharmacies without a prescription, making them a primary source of antibiotics for SM [21]. In contemporary contexts, SM is often narrowly associated with the use of readily accessible OTC products. However, the concept is considerably broader and encompasses a variety of strategies aimed at promoting health and preventing disease.

According to a classification proposed by Galán Andrés MI et al., OTC products include categories such as cosmetics, dermo pharmaceuticals, dietary supplements, phytotherapeutic agents, and personal care and hygiene products [16]. Cosmetic items—commonly used for the care of skin, hair, teeth, and nails are composed of numerous chemical compounds that individuals encounter daily [22]. Toxicological analyses of certain cosmetic products, including lipsticks, lip glosses, eye shadows, and henna, have detected harmful substances such as lead, which may induce cumulative toxic effects, and zinc, which can elicit adverse reactions at elevated concentrations. Notably, prolonged use of henna has been associated with increased lead accumulation in hair [23].

Dermo pharmaceuticals, or dermo cosmetics, are formulated not merely for cosmetic purposes but to support the treatment or alleviate symptoms of dermatological conditions. These products often contain active ingredients such as niacinamide, retinol, and salicylic acid, in addition to compounds like ceramides, glycerin, thermal water, and panthenol, which contribute to skin barrier repair and hydration [24]. However, improper use of dermo cosmetics—particularly without professional medical guidance—can result in suboptimal therapeutic outcomes. For instance, non-adherence to acne treatment regimens, including unsupervised application of dermo cosmetic products, may lead to adverse effects such as skin irritation, erythema, and exacerbation of the underlying condition, thereby complicating subsequent management [25].

Dietary supplements are designed to complement the nutritional intake of healthy individuals and those with specific deficiencies or reduced nutrient bioavailability. These products typically contain macro- and micronutrients, bioactive compounds, enzymes, or probiotics [26]. Despite their intended purpose, the intentional adulteration of dietary supplements with synthetic pharmaceuticals or their analogs presents a significant health hazard. Such adulterants may cause unforeseen adverse effects, especially given that their pharmacological profiles, including toxicity and efficacy, are often insufficiently evaluated through clinical trials [27].

Phytotherapeutic preparations are standardized and officially registered medicinal products containing active constituents derived from plants or processed botanical materials. These agents are employed in both the prevention and treatment of various health conditions and are subject to regulatory approval to ensure their quality and safety [28].

As noted by the author, personal care products (PCPs) are widely used for hygiene, grooming, cleaning, and cosmetic purposes. These include a broad array of items such as hair and skin care products, baby care formulations, sunscreens, facial cleansers, insect repellents, perfumes, fragrances, soaps, detergents, shampoos, conditioners, and oral hygiene products like toothpaste [29].

SM extends beyond the consumption of OTC medications to encompass a diverse spectrum of self-care and preventive practices. Factors such as the broad availability of pharmaceuticals, the common behavior of retaining unused medications, and various environmental and social influences have collectively contributed to the proliferation of SM practices, particularly among younger populations.

3. Factors and causes leading to self-medication

SM is a complex and multifactorial behavior shaped by a combination of socio-demographic, economic, behavioral, and medical determinants [30]. In the contemporary context—characterized by the growing accessibility of both health-related information and pharmaceutical products – the practice of SM is becoming increasingly prevalent.

Among the socio-demographic variables, age, gender, and educational attainment significantly influence SM behaviors. Research consistently demonstrates a higher prevalence of SM among women, particularly in relation to issues concerning reproductive health, such as menstrual pain and minor gynecological conditions [6]. For instance, a study conducted in Colombia reported that 62.6% of individuals engaging in SM were female [31]. Age-related trends also reveal a heightened prevalence of SM among adolescents and young adults in various regions, suggesting that younger populations are particularly susceptible to this practice [32].

Educational attainment plays a pivotal role in influencing the likelihood of SM. Empirical studies indicate that pharmacy students exhibit a higher prevalence of SM (55.2%) compared to students from

other academic disciplines (51.1%) [33]. Furthermore, the tendency of medical students to recommend or prescribe medications to family members contributes to the normalization and proliferation of this practice within their social circles [34]. A positive correlation has also been observed between higher levels of education and increased SM behavior. For example, a study conducted in Sweden found that approximately 60% of physicians reported self-prescribing medications, including psychotropic substances [35].

Economic constraints represent another significant determinant of SM. Factors such as unemployment, low income, and lack of health insurance coverage are frequently cited as contributors to the increased reliance on self-treatment. A systematic review revealed that the prevalence of SM is generally lower in high-income countries compared to middle- and low-income nations [32]. Moreover, evidence shows that 69.6% of students from low-income backgrounds engage in SM practices [36]. Under financial strain, individuals may opt for more affordable treatment alternatives such as OTC drugs or traditional remedies even when these options may not be clinically appropriate.

One of the primary behavioral challenges associated with SM is the general lack of awareness regarding its potential risks and adverse outcomes. Individuals frequently delay seeking professional medical advice, opting instead to self-diagnose and self-treat based on information obtained from unverified sources. Peer influence and the widespread dissemination of health-related content via social media significantly shape SM behaviors; however, the accuracy and reliability of such information are often questionable. A study conducted in Iran highlighted this concern, revealing that approximately 40% of students sourced their pharmaceutical knowledge from social media and internet platforms without verifying the credibility of the information [37].

Furthermore, the misuse of medications—including inappropriate prescribing, incorrect treatment duration, sharing antibiotics, and the storage of antibiotics for future use represents a serious public health concern. These practices are particularly prevalent in certain regions, notably the Middle East [38]. In response to these issues, the World Medical Association (WMA) has emphasized the importance of responsible SM in its official declaration [39]. According to the WMA, individuals who engage in SM must be well-informed about the drug in question, including its administration route, dosage, duration of use, and potential side effects. Proper SM also requires adherence to treatment guidelines and vigilant self-monitoring to detect adverse reactions or worsening symptoms promptly.

In contrast, irresponsible SM is characterized by the absence of adequate pharmaceutical knowledge, improper drug use, and insufficient health monitoring. For instance, studies have found that a substantial proportion of individuals do not read medication instructions before use [40]. Consequently, such individuals may be unaware of critical information, including the correct dosage, timing of administration, and active ingredients. This lack of awareness can result in ineffective treatment and increase the risk of harmful outcomes.

Cultural factors also play a significant role in shaping SM behaviors. In certain cultural contexts, SM is widely accepted and even encouraged, with individuals accustomed to independently managing minor health concerns. For instance, Janatolmakan et al. identified cultural endorsement of self-treatment as a key contributor to the unregulated use of medications in Iranian society [41]. In such environments, individuals—particularly students raised within these traditions—may demonstrate a higher propensity to self-medicate compared to peers from cultures where professional medical consultation is more strongly emphasized.

In addition to cultural influences, several personal and systemic factors motivate individuals to engage in SM. Mehmood and colleagues identified a range of common justifications, including the perception that the health issue is minor, reliance on prior experience, lack of time, advice from friends, transportation barriers, consultation costs, perceived urgency of the condition, and varying levels of health literacy (Figure 1) [17]. These findings are corroborated by a qualitative meta-analysis that synthesized data from 115 studies and identified five major determinants of SM: (i) cost-effectiveness (in terms of time, finances, and perceived necessity); (ii) emotional influences (particularly peer recommendations); (iii) inefficiencies in healthcare systems (including inadequate information, unmet expectations, and poor communication with healthcare providers); (iv) reliance on previous experience; and (v) the oversimplification of medical issues [42].

https://doi.org/10.32921/2663-1776-2025-60(7)-jhd045



Figure 1 – Reason for self-medication

One of the primary drivers of SM is the perception that the illness is too minor to warrant professional medical consultation. According to a survey conducted in Saudi Arabia, 60% of respondents reported this belief as the main reason for engaging in SM [43]. Symptoms such as headaches or influenza-like illnesses are frequently regarded as trivial and manageable without medical advice, a trend corroborated by several studies [44-46]. Consequently, SM is especially prevalent among students, who often employ it as a strategy for managing minor ailments [10].

Previous experience with similar health issues also plays a critical role in influencing SM behaviors. Qualitative findings reveal that individuals may initially seek professional care when encountering a new symptom but subsequently resort to self-treatment for similar future episodes [47]. This behavior is reinforced when prior SM results in perceived successful outcomes, leading individuals to replicate the practice without further medical consultation [48].

Another frequently cited factor is the lack of time or accessibility to formal healthcare services. Barriers such as long queues at clinics, the necessity of scheduling appointments in advance, and extended waiting periods contribute to the appeal of self-treatment. Multiple studies have identified prolonged wait times as a primary motivator for SM [49,50]. Additionally, 69.6% of students surveyed indicated that SM helped reduce the number of doctor visits, while 60.5% cited greater convenience as a motivating factor [51].

Recommendations from family members and close friends significantly influence individuals' decisions to engage in SM. Trust in the advice of loved ones often leads individuals to follow such recommendations without seeking professional medical guidance [15]. For example, one study reported that 14.1% of participants had received antibiotics from family or friends, while others relied on leftover medications from previous illnesses or obtained them through informal channels [16].

Limited access to healthcare services is another major factor driving SM, particularly in rural or remote areas and among individuals with mobility constraints. Evidence suggests that individuals residing in rural settings are more likely to self-medicate compared to urban populations [52]. In one study, 27.3% of participants identified the physical distance to healthcare facilities as a primary reason for self-treatment [53].

Financial barriers further exacerbate this issue. The high cost of private medical consultations can render professional care inaccessible for economically disadvantaged groups, prompting them to seek lower-cost alternatives such as OTC medications or home remedies. Among university students, economic considerations are frequently cited as a key motivator for SM. In a study conducted in Belize, 34.6% of college students reported cost savings as their primary reason for self-treating rather than consulting a physician [54,55].

In certain situations, the urgency of symptom relief prompts individuals to self-medicate. When a health condition arises suddenly and immediate intervention is perceived as necessary—yet timely access to a healthcare professional is unavailable—individuals frequently resort to using medications without consultation [56]. For example, at King Khalid University in Saudi Arabia, 36.9% of students reported seeking quick relief as their primary reason for engaging in SM [57].

Health literacy also plays a critical role in determining the safety and appropriateness of SM practices. Insufficient understanding of health-related information can lead to misuse of OTC drugs and unawareness of their potential adverse effects, which

may result in significant health risks [58]. Empirical studies have identified limited medical knowledge (64.0%), risk of side effects (60.4%), potential for misdiagnosis (53.7%), and medication misuse (49.6%) as the primary dangers associated with SM practices [9].

In summary, the prevalence of SM is shaped by a constellation of interrelated factors, including socio-demographic attributes, economic constraints, behavioral tendencies, cultural norms, and individual levels of health literacy.

4. Risks and consequences of self-medication

SM represents a significant public health concern due to its potential to result in serious clinical complications and substantial economic costs. Irrational or unsupervised use of medications may lead to misdiagnosis, inappropriate drug use, suboptimal treatment, adverse drug reactions, allergic responses, drug toxicity, therapeutic failure, and the development of complications. Among the most critical consequences is the emergence of antibiotic resistance, which is increasingly linked to the widespread and unregulated use of antimicrobial agents.

The misuse of medications without appropriate medical oversight forms the basis for a cascade of negative health outcomes, including diminished treatment efficacy. Westerlund et al. reported that 31.1% of women and 19.6% of men experienced side effects associated with OTC medications. Furthermore, treatment ineffectiveness was the most frequently cited drawback, noted by 46.5% of female participants and 38.1% of male participants [58,60]. Inadequate treatment of conditions such as bacterial infections may result in disease progression, complicating management and increasing treatment costs.

One of the most alarming consequences of widespread SM is the rise of antimicrobial resistance (AMR). The World Health Organization (WHO) has warned that approximately two-thirds of antibiotics dispensed in the pharmaceutical sector are used for SM purposes [61]. This trend represents a global threat, as resistant microorganisms diminish the effectiveness of standard antimicrobial therapies, complicating the treatment of infectious diseases. Additionally, many antibiotics and other drugs carry the risk of significant side effects. A systematic review revealed that SM with antimicrobials was associated with adverse outcomes including allergic reactions (5.9%), therapeutic failure (11.8%), and, in rare cases, death (5.9%) [62].

Patients most frequently engage in SM to address symptoms related to gastrointestinal disturbances, cough, and acute respiratory infections [63]. However, the unsupervised use of pharmaceutical products without a professional assessment of the patient's clinical condition can not only reduce the likelihood of therapeutic success but also increase the risk of complications. The most commonly reported adverse effects in such cases include gastrointestinal disorders and neuropsychiatric symptoms. Among the primary drug classes used in SM are non-steroidal anti-inflammatory drugs (NSAIDs), analgesics, and benzodiazepines. Additionally, phytotherapeutic and homeopathic remedies account for approximately 9.1% of all SM cases [64].

Paracetamol is among the most frequently self-administered medications, particularly among students [65]. Despite its widespread availability and reputation as a relatively safe antipyretic and analgesic agent, irrational use of paracetamol poses substantial health risks. Studies indicate that paracetamol is implicated in up to 6% of all drug poisoning incidents, 56% of severe acute liver injury and liver failure cases, and 7% of drug-induced hepatopathies [66].

A particularly critical concern is the SM of antibiotics without medical supervision or the premature discontinuation of antibiotic therapy. These practices significantly increase the risk of antimicrobial resistance, as microorganisms develop defense mechanisms against active agents. Furthermore, the unauthorized alteration of treatment regimens without physician consultation reflects a troubling trend of autonomous pharmacological decision-making unsupported by adequate clinical knowledge [67].

Misdiagnosis is another major risk associated with SM. Individuals lacking formal medical training may misinterpret symptoms, leading to inappropriate treatment choices. This not only fails to address the underlying pathology but may also allow disease progression [14].

SM involving prescription drugs is frequently associated with adverse drug reactions (ADRs), some of which may be severe or even fatal [68]. One case study reported a fatal adverse event in a pregnant woman who experienced a spontaneous abortion following the use of essential oils [69,70]. Additional investigations have documented hospitalizations resulting from SM-related side effects, including life-threatening complications [71].

In recent years, the widespread use of herbal preparations, biologically active supplements, and

antibiotics—often of varying origin and pharmacological targeting—has become increasingly prevalent. According to the National Bureau of Statistics, the production of antibiotics exhibited significant variability between 2020 and 2023. Following a marked decline in output during 2021–2022, a moderate recovery was observed in 2023 [68]. Concurrently, a rise in drug-related poisonings has been reported, including cases documented in Kazakhstan. Mortality data associated with poisoning from pharmaceuticals and biologically active substances further underscore this concerning trend. Between 2010 and 2020, the case fatality rate for such poisonings among hospitalized patients increased from 3.1% to 6.3%, representing a twofold rise in mortality over the decade (Figure 2) [73].

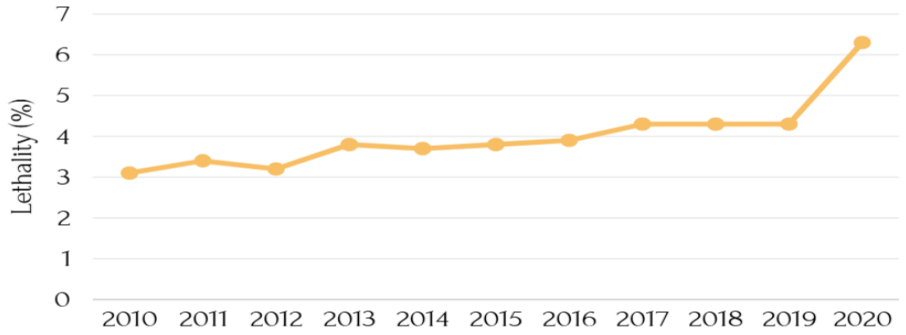

Figure 2 – Dynamics of lethality from poisoning (2010-2020)

A particularly pronounced increase in drug-related poisonings was observed in 2020, which may be attributed to several concurrent factors. These include the growing prevalence of SM, the misuse of pharmaceuticals and dietary supplements, the non-medical use of toxic substances, and the broader impact of the COVID-19 pandemic. The pandemic not only facilitated greater access to unregulated treatments but also disrupted routine medical services, thereby encouraging individuals to self-manage their health conditions in the absence of professional care.

These developments have led to several critical public health consequences: heightened risks of overdose and toxic drug reactions; delays in diagnosis and progression of untreated conditions; increased strain on healthcare infrastructure; elevated mortality rates; and a surge in treatment-resistant infections.

Although SM may initially appear to be a convenient and efficient strategy for managing minor ailments, its potential risks far outweigh its perceived benefits. The inappropriate selection of medications, unsupervised and prolonged use, and the emergence of adverse effects and complications—including the acceleration of antimicrobial resistance—pose serious threats to individual and public health, potentially resulting in life-threatening outcomes.

5. The influence of self-medication on the educational process of students

Contemporary university students face numerous academic and personal challenges, including the need to manage their health within constrained timeframes and limited financial resources. In this context, SM may appear to be a convenient and practical solution. However, empirical evidence indicates that this practice can result in serious health-related and academic consequences.

One of the primary concerns linked to SM among students is the increased likelihood of absenteeism. The use of inappropriate medications or the absence of professional medical intervention can exacerbate health conditions, leading to missed lectures and academic activities. Research has shown that students who misuse stimulants tend to miss more classes and exhibit lower grade point averages (GPAs) [74,75]. Such absences negatively affect academic performance, as the missed content is often inadequately assimilated, resulting in students falling behind in their coursework.

Moreover, certain medications commonly used in SM—particularly without supervision—may impair cognitive functions such as concentration and attention [76]. In efforts to enhance academic focus and performance, some students turn to the non-medical use of prescription stimulants, such as methylphenidate. This behavior poses additional risks. Several studies found that students who used methylphenidate illicitly were more likely to engage in

alcohol and substance abuse and experienced more frequent negative consequences related to drug use, in comparison to both students who used stimulants as prescribed and those who abstained altogether [77,78].

The misuse of sleeping pills and psychostimulants represents a growing concern among university students [79]. These substances are often consumed without adequate awareness of their potential for dependency, adverse side effects, and long-term health consequences. According to one study, 34% of students who engaged in SM reported experiencing negative health outcomes as a result [80]. Even when physically present in academic settings, such students may struggle with impaired concentration, reduced cognitive performance, and diminished motivation. The physical discomfort and psychological stress induced by adverse drug effects further compromise learning efficacy and academic engagement.

A particularly severe consequence of SM is the progressive deterioration of general health. Inappropriate selection of medications, incorrect dosages, and lack of medical oversight increase the risk of complications and the development of chronic conditions [81]. These health issues often necessitate prolonged and potentially costly treatment regimens, which can result in increased absenteeism and further decline in academic performance.

In summary, SM constitutes a high-risk behavior that not only jeopardizes student health but also undermines educational attainment and overall academic success.

6. Prevention and avoidance of risks of self-medication

The annual increase in antibiotic consumption highlights the urgent need for effective preventive strategies to ensure their rational use. In response to this growing public health concern, researchers have identified three priority areas for promoting responsible medication practices in Kazakhstan: (i) enhancing public education on the risks and proper use of pharmaceuticals; (ii) implementing stricter regulatory controls on the sale and distribution of medications; and (iii) strengthening the role of healthcare professionals by improving access to qualified medical care (Figure 3) [82].



Figure 3 – Directions for preventing SM

Raising public awareness about the risks associated with SM is among the most critical strategies for its prevention, particularly regarding the use of antibiotics and other potent pharmaceuticals. Health care providers are the most frequently cited source of information on SM, with 39.1% of individuals reporting physicians or pharmacists as their primary reference [83]. This underscores the pivotal role of healthcare professionals in mitigating inappropriate medication practices. Physicians and pharmacists are well-positioned to educate patients on the importance of proper prescribing, adherence to treatment regimens, and the risks of unsupervised drug use.

In community pharmacies, pharmacists should actively engage in providing counseling on the safe and rational use of medications. This includes verifying prescriptions, advising on dosage, route of administration, therapeutic effects, contraindications, potential drug-drug and drug-food interactions, and proper storage of medications at home [84]. Pharmaceutical counseling has become a central

https://doi.org/10.32921/2663-1776-2025-60(7)-jhd045

element in combating SM and is formally integrated into the retail process of medicinal products.

In Kazakhstan, the Ministry of Health and Social Development has established national standards aligned with Good Pharmacy Practice (GPP). Under these standards, pharmacists are tasked with multiple responsibilities: promoting rational and safe medication use, supporting disease prevention and health promotion, disseminating reliable information on pharmaceuticals, assisting with appropriate use of prescription drugs, and reporting adverse drug reactions. Notably, counseling patients on the rational and responsible use of medications, including for SM purposes, is a core function of pharmaceutical practice under the GPP framework [85].

In Commonwealth of Independent States (CIS) countries, including Kazakhstan, the implementation of GPP standards has contributed to the establishment of a unified legal framework for pharmaceutical counseling. The significance of GPP is recognized not only at the regional level but also globally. In 1998, the WHO endorsed GPP and recommended its integration into pharmacy practice across all countries [86, 87].

Despite these regulatory advancements, the OTC availability of prescription medications remains a major factor contributing to the widespread practice of SM. Strengthening regulatory oversight of drug dispensing practices and restricting the advertisement of prescription drugs are essential to preventing misconceptions regarding the safety and appropriateness of medication use without medical supervision.

An important development in antimicrobial stewardship is the WHO's 2019 introduction of the AWaRe (Access, Watch, Reserve) classification system for antibiotics. This framework categorizes antibiotics based on their therapeutic value, resistance risk, and the level of regulatory control required. It serves as a global tool to guide prescribing practices and reduce antimicrobial resistance by promoting the responsible use of antibiotics [82].

In Japan, a randomized controlled trial led to the development of an educational intervention aimed at promoting responsible SM practices through community pharmacies and pharmacists. The program includes the distribution of informational materials, the use of "patient notebooks" containing personalized recommendations, and the promotion of healthy lifestyles and disease prevention strategies [88]. However, the effective implementation of such initiatives is contingent upon the continuous professional development of pharmacy personnel. Notably, over 30% of surveyed pharmacists acknowledged deficiencies in their knowledge of rational pharmacotherapy, underscoring the need for ongoing education and improved access to current clinical guidelines and pharmaceutical information [89].

Limited access to medical care remains one of the primary drivers of SM. Expanding the reach and capacity of primary healthcare services—particularly through online consultations and telemedicine—can substantially improve patient guidance and oversight, especially in underserved or remote regions. Telemedicine platforms have demonstrated effectiveness in educating the public about safe medication use, potential side effects, and drug interactions. Moreover, evidence suggests that telemedicine enhances the management of chronic conditions and increases patient confidence in the appropriate use of medications [90,91].

Time constraints, psychological stress, and the desire for rapid symptom relief are additional factors that contribute to the prevalence of SM. To address these behavioral drivers, it is essential to cultivate a broader culture of health consciousness. This includes promoting proper nutrition, regular physical activity, routine preventive health check-ups, and timely consultation with healthcare professionals at the onset of symptoms.

Effectively preventing SM necessitates a multifaceted strategy. Key components include enhancing public awareness of the risks, enforcing stricter regulations to limit the unmonitored sale of medications, improving access to healthcare services, and fostering the active involvement of medical professionals in patient education. Only through the coordinated efforts of governmental bodies, healthcare providers, and the general population can the risks associated with the unsupervised use of pharmaceuticals be mitigated, thereby contributing to the preservation and improvement of public health.

7. Discussion

Our review confirms that self-medication among students remains a widespread practice, largely facilitated by the easy availability of medicines, including over-the-counter drugs.

The main reasons for self-medication include the perception of illness as not serious, previous experience, lack of time, recommendations from friends, transportation difficulties, high cost of consultations, and low level of medical literacy. These findings are consistent with the results of a study by Alshammari et al. conducted in Hail (Saudi Arabia), where the key factors were "mild illness" and "time savings," followed by urgent need for treatment and cost-effectiveness [43]. In the study by Ikwara et al., the most common motives for self-medication were emergency use (72.5%), mild ailments (70.6%), and the desire to save money (67.3%) [88]. Similar data were obtained by Loni and colleagues, who showed that female students at Majmaah University (Saudi Arabia) most often resorted to self-medication for quick relief of symptoms (77.5%) and to save time (76.3%).

The main complaints that prompted self-medication were headaches, cough, fever, and fever. These results are consistent with the data from Hassan et al., where headaches were reported by 80.4% of respondents, followed by pain of various locations (79.9%), respiratory symptoms (73.2%), and gastrointestinal symptoms (60.9%) [90].

With regard to differences between urban and rural residents, research data remains contradictory. Mamcarz et al. identified a higher prevalence of self-medication in rural areas, while Alduraibi et al. noted a greater tendency toward risky self-medication among students living in cities [46,91]. These discrepancies are likely due to differences in access to medical care, socioeconomic conditions, and cultural characteristics, which highlights the need for further comparative studies.

A strength of this review is the use of leading international databases (PubMed, Web of Science, Scopus), which ensured broad coverage and diversity of sources. An additional advantage was the comparison of data from different regions of the world, which made it possible to identify both general patterns and specific features, including the situation in Kazakhstan.

A limitation of the review is that it searched only three international databases, which may have affected the completeness of the coverage of publications, especially in other languages. In addition, the small number of Kazakhstani studies makes it difficult to compare the national situation with international experience.

Despite the available data set, there are still gaps that require further study. Future research should focus on developing and evaluating the effectiveness of educational programs for students, as well as quantitatively assessing the economic impact of self-medication on Kazakhstan's healthcare system.

8. Conclusions

The literature review demonstrates that SM is a prevalent practice among young individuals and is associated with significant health risks, including adverse drug reactions, the emergence of antimicrobial resistance, deterioration of overall health, and negative impacts on academic performance. These findings highlight the urgent need for the development and implementation of effective preventive strategies.

Proposed interventions—such as enhancing health literacy, strengthening regulatory oversight of prescription drug sales, and expanding access to professional health counseling—hold promise in mitigating the risks associated with SM. However, further research is warranted to evaluate the long-term physical, psychological, and academic consequences of SM among students.

The findings of this review emphasize the critical importance of sustained public health efforts to curb SM and provide a foundation for designing targeted strategies to promote the safe and responsible use of medications among youth.

Conflict of Interest. There is no conflict of interest for all authors.

Acknowledgments. None.

Funding. None.

Author Contributions: Conceptualization – Zh.B. and A.A.; methodology – A.A., Zh.B.; validation – Zh.B.; formal analysis, A.A.; writing – original draft preparation – A.A.; writing – review and editing – A.A.

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Университет студенттері арасындағы өз бетімен емделу тәжірибесін зерттеу: Қоғамдық денсаулық сақтау тұрғысынан

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Түйіндеме

Қазіргі заманда дәрі-дәрмектердің қолжетімділігі, дәрігерге қаралуға уақыттың жетіспеушілігі және жеткілікті білімнің болмауы себебінен жастар арасында науқастардың өз бетімен ем қабылдау тәжірибесі кең таралуда. Осы зерттеудің мақсаты – университет студенттері арасындағы өз бетімен емделу тәжірибесі туралы әдебиетті кешенді түрде қарастырып, оның таралуын, себеп факторларын, денсаулыққа және оқу үлгерімге әсерін, сондай-ақ алдын алу және араласу шараларының тиімділігін талдау. PubMed, Web of Science және Scopus дерекқорларында университет студенттері арасындағы өз бетімен емделуге байланысты түйін сөздер арқылы әдебиеттерге шолу жүргізілді. Бастапқыда 1051 мақала анықталып, олардың ішінен маңыздылығына байланысты 91 мақала таңдалып алынды. Әдеби шолу өз бетімен емделу денсаулыққа және әлеуметтік жағдайға зиянды салдарын әкелетінін көрсетеді. Олардың қатарында жанама әсерлердің дамуы, антимикробтық төзімділіктің артуы, жалпы денсаулық жағдайының нашарлауы және оқу үлгерімінің төмендеуі кіреді. Сонымен қатар, өз бетімен емделудің алдын алу стратегиялары қарастырылды. Оның ішінде медициналық сауаттылықты арттыру, рецепт бойынша берілетін дәрілерді сатуды бақылауды күшейту және қолжетімді кеңесші медициналық қызметтерді дамыту сияқты шаралар бар. Зерттеу нәтижелері өз бетімен емделудің қоғамдық денсаулық сақтау үшін шешілмеген мәселе болып қалуда екенідігін және оның кең таралғандығымен расталады. Мәселенің кеңінен таралуы медициналық көмекке қолжетімділіктің төмендігі мен денсаулыққа жауапсыз қарау үрдісімен байланысты. Сапалы медициналық қызметке қолжетімділікті жоғарылату және денсаулыққа жауапкершілікпен қарауды қалыптастыру қажет.

Түйін сөздер: өз бетімен емделу, дәрі-дәрмекті өздігінен қабылдау, студенттер.

Изучение практики самолечения среди студентов университетов: Взгляд с позиции общественного здравоохранения

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Резюме

В современном мире самолечение становится все более распространенной практикой среди молодежи из-за доступности медикаментов, нехватки времени для обращения к врачу и недостаточной осведомленности о рисках, связанных с самолечением. Цель данного исследования — провести комплексный обзор литературы о практике самолечения среди студентов университетов, рассматривая его распространенность, способствующие факторы, последствия для здоровья и академической успеваемости, а также эффективность существующих мер профилактики и вмешательства. Был проведен поиск литературы в базах данных PubMed, Web of Science и Scopus с использованием ключевых слов, связанных с самолечением среди студентов. Из первоначально найденных 1051 статьи для анализа были отобраны 91, соответствующие критериям

релевантности. Обзор литературы показывает, что самолечение может привести к серьезным медицинским и социальным последствиям, таким как побочные эффекты, антимикробная резистентность, ухудшение общего состояния здоровья и снижение академической успеваемости. Также рассматриваются существующие стратегии предотвращения самолечения, включая повышение уровня медицинской грамотности, усиление контроля за продажей рецептурных препаратов и развитие доступных консультационных медицинских служб. Результаты исследования показали, что самолечение остается нерешенной проблемой общественного здравоохранения, что подтверждается его высокой распространенностью. На это влияют трудности доступа к медицинской помощи, а также нездоровое поведение, связанное с обращением за медицинскими услугами. Необходимо улучшать доступ к качественному медицинскому обслуживанию и способствовать формированию ответственного отношения к здоровью.

Ключевые слова: самолечение, самостоятельное введение, студенты.

https://doi.org/10.32921/2663-1776-2025-60(7)-jhd045