



A QUESTIONNAIRE BASED STUDY REGARDING KNOWLEDGE, ATTITUDE, PRACTICE OF SELF-MEDICATION AMONG GENERAL POPULATION

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ABSTRACT

Today, the daily practice of self-medication is increasing due to the availability of various Over-the-counter medications. The practice of self-healing is becoming popular all over the world and is now playing an important role in self-care. When used properly, self-healing saves time and money. Improper self-medication or drug abuse can lead to serious Adverse Drug Reaction and potentially fatal consequences, as well as the development of antibiotic resistance. The aim of present study was to assess knowledge, attitude, practice towards responsible self-medication among general population. This community survey was carried out in general population where 403 particulars were interviewed and assessed Knowledge, Attitude and Practice on Self-medication and statistical analyses was done. Our study showed 261(65%) have poor knowledge and 46(11%) have good knowledge about self-medication, 12 (2.9%) had negative attitude and 391(97.2%) had positive attitude and 36(9%) of participants were followed poor practices and 280(70%) followed good practices. Our study concludes that participants had positive attitude and fair practice towards responsible self-medication but the participants knowledge levels were low. However more effort needed

in creating awareness programs, camps and other activities to increase knowledge. This will have a positive effect on rational use of Over-the-counter (OTC/ self- medicated) drugs that provide a high level of safety in drug use.

KEYWORDS: Self-medication, Awareness, Knowledge, Attitude, Practice, General Population, OTC drugs.

INTRODUCTION:

Introduction to KAP surveys:

The Knowledge, Attitudes, and Practices (KAP) survey is a structured questionnaire consisting of predetermined questions designed to gather both quantitative and qualitative data. It is used to gain insights into people's understanding, beliefs, and behaviors. By conducting KAP surveys, we can identify misconceptions or misunderstandings that may hinder desired actions and serve as potential obstacles to behavior change. It's important to note that KAP surveys primarily capture opinions and are based on statements. In simpler terms, they provide information about what people say, but there can be notable disparities between what is expressed and what is actually practiced. [1]

What is a KAP Survey:

KAP surveys are usually taken to gather information about knowledge (i.e., what a person knows), attitudes (i.e., what a person thinks) and practices (i.e., what is done) about general and/or specific themes of a particular population [2]

KAP Survey can generate data that can be used to:

- Identify knowledge gaps, cultural beliefs, and patterns of behavior that can highlight the needs, challenges, and obstacles related to program planning and implementation.
- Enhance comprehension of prevalent information, attitudes, and influential factors affecting behavior.
- Establish initial benchmarks and measure the changes that occur as a result of interventions.
- Evaluate and identify communication processes and essential resources that are crucial for effective program implementation.
- Determine program priorities and make informed decisions based on the gathered information. [2]

Uses: A KAP survey can:

- Quantify the magnitude of a known situation, validate or refute a hypothesis, and introduce new insights into the actual state of affairs.
- Improve understanding, attitudes, and behaviors regarding specific subjects, and assess existing knowledge and practices related to various health topics.
- Establish initial reference points (benchmarks) for future evaluations and gauge the impact of health education efforts in modifying health-related behaviors.

- Develop an intervention strategy tailored to the specific local context and cultural influences, designing activities that are suitable for the target population. [1]

DEFINITION: The World Health Organization (WHO) provides a definition of self-medication (SM) as the utilization of over-the-counter (OTC) medications to address self-diagnosed symptoms or conditions, as well as the persistent and repetitive use of prescribed medications for recurring illnesses. [3]

A variety of reasons have been cited for common motivations for SM practice, with prior experience with medication and mild symptom management being the most common. Over-the-counter (OTC) medications were used in many studies, although some studies also included medications (OTC), who have reported using prescription drugs that are dangerous without professional advice [4].

OTC drugs, which consumers can buy without a doctor's prescription, are considered relatively safe and suitable for use without the supervision of a healthcare professional. They are divided into ten categories according to the anatomical therapeutic chemistry classification of WHO (ATC): analgesics, laxatives, antithrombotic, antacids, cough and cold medicines, antihistamines, dermatological, throat medicines, nasal medicines and antidiarrheals [5].

Nonsteroidal anti-inflammatory drugs (NSAIDs) are among the most common OTC analgesics. These drugs are prescribed by themselves, although they can cause side effects. Approximately 20% of patients cannot tolerate NSAIDs because of heartburn, abdominal pain, and/or diarrhea. Chronic use of NSAIDs can cause gastric or duodenal ulcers. In addition, accidental overdose of paracetamol can cause liver failure and have serious side effects.[6]

Self-medication is part of self-care, which involves individuals choosing and using medication to treat illnesses or symptoms that they recognize for themselves. Medicines that are available to buy over-the-counter are often called over-the-counter (OTC) drugs that are available without a prescription in pharmacies [7].

Self-medication encompasses both advantages and potential drawbacks. When practiced responsibly, self-medication can help conserve limited medical resources by addressing minor ailments without the need for professional intervention. It can alleviate the strain on healthcare facilities and decrease the expenses and time associated with seeking medical attention for mild symptoms. [8]

Over-the-counter (OTC) drugs are medications that can be purchased directly by consumers from pharmacies without the need for a prescription, unlike prescription drugs that require a valid prescription for dispensing. Insufficient knowledge regarding OTC medications can have direct negative consequences, including excessive usage or failure to follow recommended treatment regimens. This can result in poor treatment outcomes and ineffective management of health conditions. [9]

In a comprehensive global study conducted across 50 countries, it was found that 95% of respondents expressed their willingness to use medication for self-treating minor illnesses. Although safety and effectiveness are regarded as crucial factors when selecting self-administered medications, there is no

universal agreement on the most effective approach for consumers to ensure the appropriate use of such medications. [10]

Responsible self-medication is influenced by two primary factors related to drug safety: the inherent properties of the drug itself and the manner in which it is utilized. The appropriate use of medications relies on the availability of relevant information and the ease with which individuals can access and apply that information within the context of self-medication. Notably, the analgesic properties of drugs play a prominent role in this regard. One example of an over-the-counter (OTC) drug that has been available for self-medication since the early days is paracetamol, which is commonly used as a painkiller. [10]

Paracetamol is known for having minimal clinically significant drug interactions. Despite the possibility of interactions with warfarin, paracetamol remains the preferred analgesic for individuals on anticoagulant therapy. This may explain why approximately 2.0% of paracetamol users also take warfarin. In contrast, nonsteroidal anti-inflammatory drugs (NSAIDs) have a higher potential for drug interactions.

Paracetamol is generally well tolerated when used within the recommended dosage range (up to 4000 mg per day). Data from prospective studies involving over 30,000 patients have demonstrated that repeated administration of therapeutic doses of paracetamol does not lead to liver impairment or damage. [10]

It is worth noting that there is recognition in the literature that an acute ingestion of 10 g of paracetamol can potentially cause liver injury and should be promptly investigated. Therefore, it is crucial for consumers to understand the importance of adhering to the recommended dosage and to avoid consuming multiple products containing paracetamol simultaneously.

Self-medication encompasses various practices, including taking medications without a prescription, using a previous prescription for a similar condition, or relying on over-the-counter medications without consulting a doctor. However, self-medication can pose significant risks and lead to various issues. These include adverse reactions to medications, which can contribute to the development of antibiotic resistance and potentially waste valuable healthcare resources.[11]

The main aim of the present study is to evaluate the knowledge, Attitude, practice of self- medication among general population. Assessment of the level of knowledge of self-treatment. Assessment of attitudes towards self-medication among the population. Evaluation of self-medication practices in the community.

MATERIALS AND METHODS

STUDY DESIGN: The current research project was a Community Survey.

STUDY SITE: The study was conducted In and around places of Tirupati, tirupathi (dist), Andhra Pradesh, India.

STUDY DURATION: 6 months (November 2022 -April 2023).

Time for data collection: 4 months

Time for categorization of results: 1 month

Time for calculating results: 1 month

STUDY POPULATION: 403 people

STUDY MATERIALS:

- Informed consent form (ICF)
- Knowledge, Attitude and Practices (KAP) questionnaire

STUDY CRITERIA:

INCLUSION CRITERIA: Volunteers of age 18 - 75 years

EXCLUSION CRITERIA: Pediatrics, Patients unwilling to participate in the study.

DATA COLLECTION:

This community survey was conducted with the approval of the institutional review board at Sri Padmavathi School of Pharmacy in Tiruchanoor, Tirupati, Andhra Pradesh, India. The study included volunteers from the general population aged between 18 and 75 years. However, the survey excluded individuals from the pediatric age group and those who were unwilling to participate.

A specifically tailored questionnaire was developed to evaluate the practice of self-medication, attitudes toward self-medication, and knowledge pertaining to self-medication. There were 18 questions in all where 9 questions regarding knowledge, 4 questions regarding attitude, 4 questions regarding practice. The data collected from questionnaire was subjected to suitable scoring & separate scores was given and assessed. 403 questionnaire forms were collected among general population, according to study criteria. After administering the KAP questionnaire, the obtained scores were recorded and entered into Microsoft Excel 2013 for data analysis and calculations. The necessary computations were performed, and the results were obtained based on the entered data.

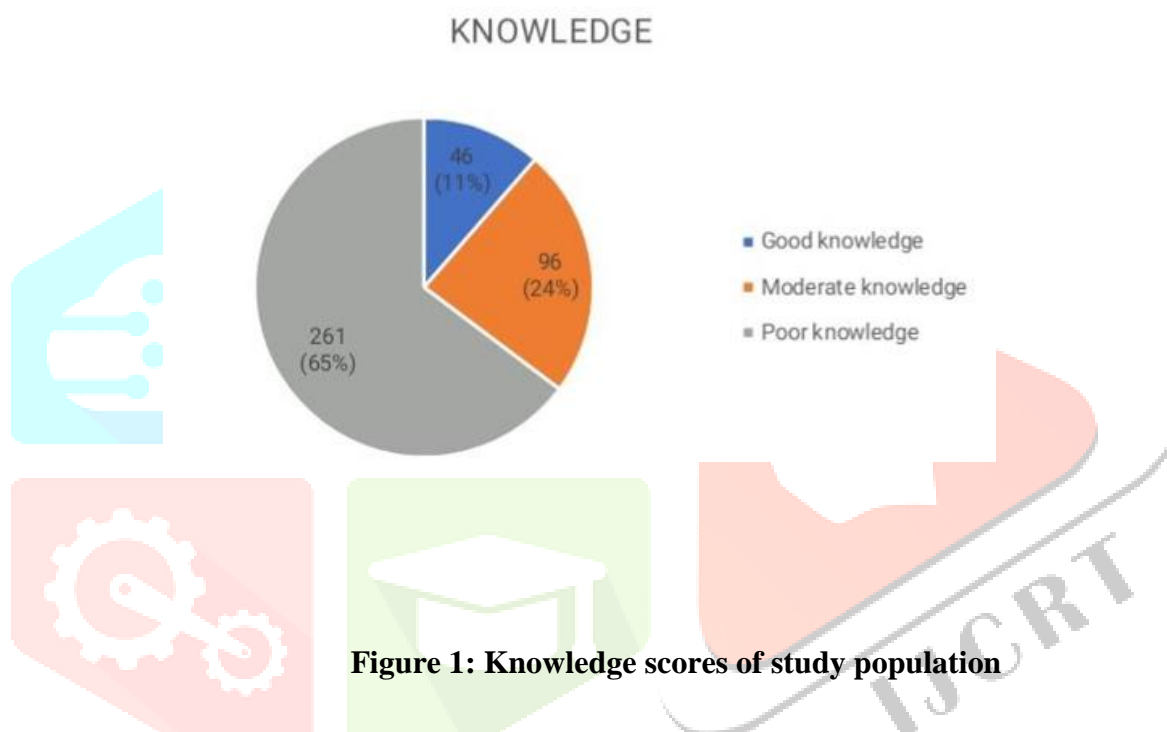
RESULTS:

Subsequent to collection, application of demographic details KAP responses were entered into the Microsoft Excel-2013 and calculation was made and firstly, demographic details segregation was done.

Out of all the respondents, the largest portion, comprising 196 individuals, accounted for 48.63% of the total, fell within the age group of 18-33 years. The age group of 33-49 years constituted 134 respondents, making up 33.25% of the participants. Additionally, the age group of 50-65 years consisted of 66 individuals, representing 16.37% of the respondents. Lastly, only 7 people, equivalent to 1.73% of the total, were aged between 66 and 75 years.

KNOWLEDGE WISE DISTRIBUTION:

In a total of 403 participants **46(11%)** were having good knowledge, **96(24%)** were having moderate knowledge, **261(65%)** were having poor knowledge regarding self- medication. The original Bloom's cut-off points were employed to categorize the levels of knowledge. According to this classification, a score of 7-9, corresponding to 80%-100% correct responses, indicated a good level of knowledge. A score of 4-6, representing 60%-79% correct answers, denoted a moderate level of knowledge. Finally, a score of 3 or less, indicating less than 60% correct answers, signified a poor level of knowledge. The presence of poor knowledge on over-the-counter (OTC) drugs might explain the lower scores obtained in the survey. [Figure 1]



In the survey done in 403 active volunteers, 29 people (7.1%) have scored 0, 87 people (21.5%) have scored 1, 77 people (19.1%) have scored 2, 68 people (16.8%) have scored 3 which indicates poor knowledge. 49 people (12.1%) have scored 4, 31 people (7.6%) have scored 5, 16 people (3.9%) have scored 6 which indicate moderate knowledge. 14 people (3.4%) have scored 7, 15 people (3.7%) have scored 8, 17 people (4.2%) have scored 9 which indicates good knowledge.

A total of 403 participants **46 (11.41%)** were having Good knowledge, **96(23.82%)** were having Moderate knowledge, **261(64.76%)** were having Poor knowledge regarding self- medication. This is may be due to lack of knowledge on OTC drugs.

ATTITUDE WISE DISTRIBUTION: The Likert scale used in the survey consisted of statements with both positive and negative responses, rated on a scale ranging from strongly agree (5) to strongly disagree (1). The maximum possible score for all the statements combined was 20, while the minimum score was 4. Based on the scoring system, if an individual obtained a score of 10 or higher, they would be considered to

have a positive attitude toward responsible self-medication practice. Conversely, if the score was below 10, it would indicate a negative attitude toward responsible self-medication practice. In a total of 403 participants 319 (97%) were having positive attitude, 12 (2.9%) were having negative attitude towards self-medication. This negative attitude in some people was developed due to the lack of awareness regarding the OTC drugs [Figure 2].

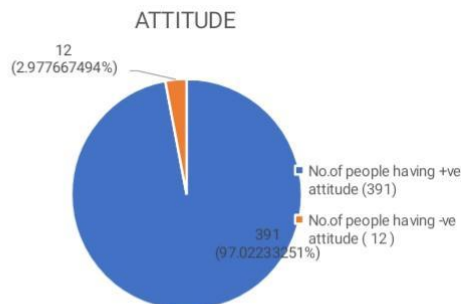


Figure 2: Attitude wise distribution of study population

In the survey done in 403 active volunteers 95 people (23.5%) have scored 20, 71 people (17.6%) have scored 16, 60 people (14.8%) have scored 17, 31 people (7.69%) have scored 18, 30 people (7.4%) have scored 15, 28 people (6.94%) have scored 14, 19 people (4.7%) have scored 10, 17 people (4.2%) have scored 12, 15 people (3.7%) have scored 13, 13 people (3.2%) have scored 11, 12 people (2.9%) have scored 19 which indicates positive attitude. 5 people (1.2%) have scored 7, 3 people (0.7%) have scored 9 and 8, 1 person (0.2%) have scored 6 which indicates negative attitude.

PRACTICE WISE DISTRIBUTION:

If respondents say yes to both rational questions will be considered as good practice. If respondents say No to both rational questions will be considered as Malpractice or Risky practice. If respondents say 1 yes and 1 No will be considered as moderate practice.

If respondents say yes to both irrational questions will be considered as Malpractice or Risky practice. If respondents say No to both irrational questions will be considered as good practice. If respondents say 1 yes and 1 No will be considered as moderate practice [Figure 3].

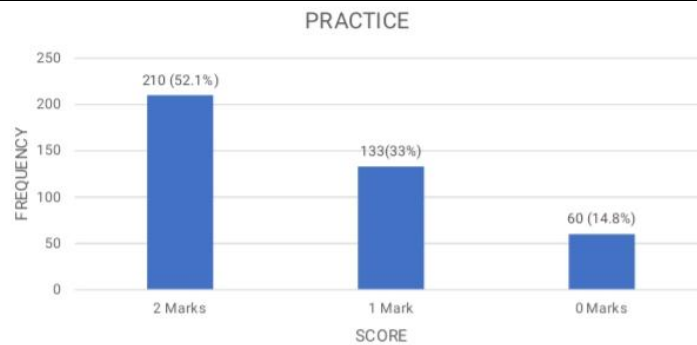


Figure 3: Graphical representation for Rational questions

In a community survey conducted in 403 participants, 210 (52%) have shown Good practice, 60 (14.88%) have shown Risky practice and 133 (33%) have shown Moderate practice towards Rational questions provided in the survey questioner form [Figure 5].

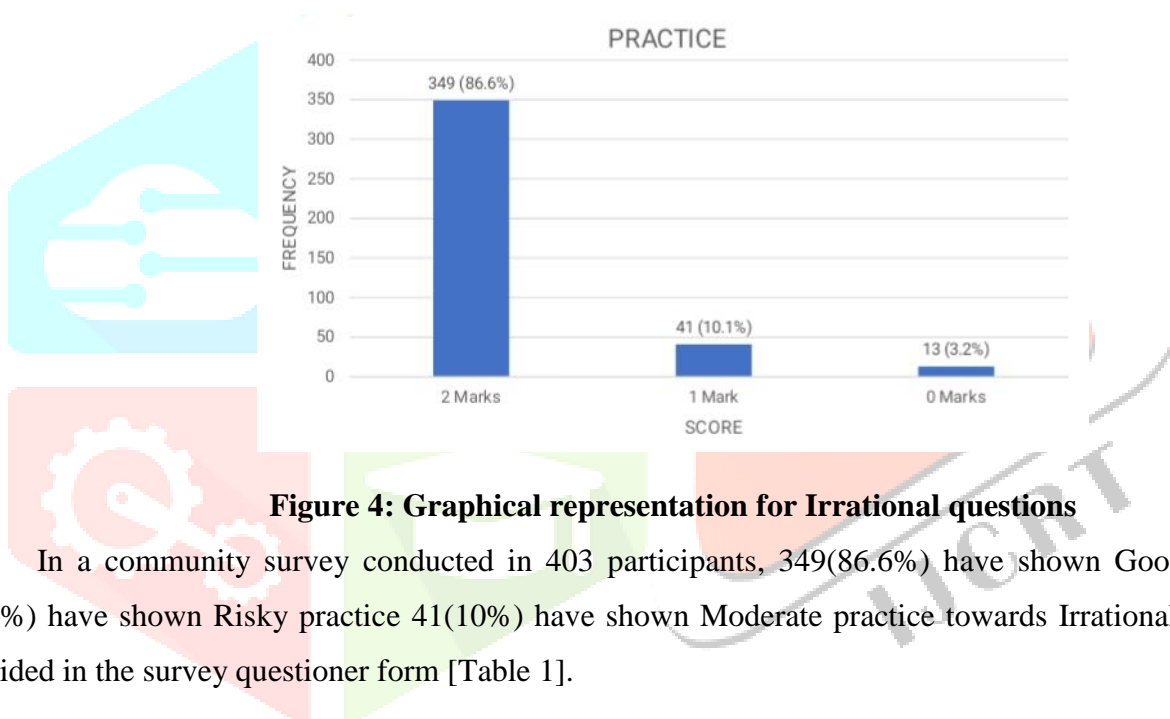


Figure 4: Graphical representation for Irrational questions

In a community survey conducted in 403 participants, 349(86.6%) have shown Good practice. 13(3%) have shown Risky practice 41(10%) have shown Moderate practice towards Irrational questions provided in the survey questioner form [Table 1].

VARIABLE	FREQUENCY (N=403)	PERCENTAGE %
KNOWLEDGE		
Good knowledge	46	11.4
Moderate knowledge	96	23.8
Poor knowledge	261	64.7
ATTITUDE		
Positive attitude	391	97
Negative attitude	12	3
PRACTICE		
Responsible self-medication practice	314	78
Irrational self-medication practice	89	22

Table 1: Adequacy of knowledge attitude and practice of self-medication

Interpretation of scores with respect to demographics of study population is presented in Table 2.

Variable	Total(n=403)	Good knowledge n=46. n (%)	Positive attitude n=391 n(%)	Rational practice n=314 n(%)
Age (years):				
18-33	196	22 (47.8)	190 (48.5)	156 (49.6)
34-49	134	21 (45.6)	129 (32.9)	108(34.3)
50-65	66	3 (6.5)	65 (16.6)	45 (14.3)
66-75	7	0 (0)	7 (1.7)	5 (1.5)
Gender:				
Male	207	23 (50)	202 (51.6)	155(49.3)
Female	196	23 (50)	189 (48.3)	159 (50.6)
Educational qualification:				
Literate	362	42 (91.3)	352 (90)	282 (89.8)
Illiterate	41	4 (8.6)	39 (9.9)	32 (10.1)

Table 2: The relationship between demographic features and excellent knowledge, a positive attitude, and rational behavior toward responsible self-medication in the general population

DISCUSSION:

Self-medication refers to the practice of individuals treating their own illnesses using approved drugs that are readily available without a prescription. When used as directed, these medications are both safe and effective. However, if they are used incorrectly, they can result in undesired effects. The issue of self-medication is widely supported, particularly among healthcare students and the general population. Consequently, it is crucial to develop a knowledge, attitude, and practice (KAP) towards responsible self-medication among the general population, as it can promote good health and decrease drug-related problems. While most previous research has focused on assessing self-medication behaviors and practices, this study specifically examines responsible self-medication in the general population. In our study most of the participants 196(48%) fall in group of 18-33 years among sample size 403 & 7(1.73%) participants were fall in group of 66-75 years. In a study of Tesfamarian et.al [5] showed that median age of participants was 37 years.

In our study, the number of male participants (207, 51.3%) was higher than the number of female participants (196, 48.6%). These findings align with the results of a study conducted by Tesfamarian et al [5], which reported that 381 (64.9%) of the participants were male.

In our study among all Participants 146(36.2%) of participants are aware about self-medication and 257(63.8%) are unaware about self-medication. Similar findings were observed in a study done by Susheela et.al., [7] showed that majority of participants 332(82.3%) are aware about responsible self-medication. Participants in our study required to gain Knowledge regarding self-medication.

Most of the participants 225(55.8%) participants are aware that certain medication can interact with food / other medications & 178(44.2%) participants are unaware regarding drug interactions that are observed in our study.

Most of the participants in our study 258(64%) are unaware about Adverse Drug Reaction & 145(36%) are aware about ADR's. This may be due to having knowledge regarding adverse reactions.

In our study more than half of participants 256(63.5%) don't know that self-medication may cause tolerance/ dependence & 147(36.5%) are aware about tolerance/ dependence. There is a need to create awareness regarding dependence of self-medication.

In our study among all Participants 349(86.6%) are unaware of Rational Drug Use & 145(36%) are aware of RDU. Participants need to know how to take the medicine at right dose, right interval, right time, right route of administration to avoid any side effects.

In current study most of the participants 171(42.4%) purchase the drug form pharmacy by saying symptom & 127(31.5%) purchase by name of drug & 87(21.6%) purchase by showing old prescription. In our study most of the participants 219(54.3%) know that specific drug should be taken for specific condition through advised by pharmacist/ other health care team.

In our study 319(79.2%) participants aware that dose of specific drug to be taken for specific condition & 84(20.8%) are unaware about dose of the drug. Participants need to upgrade regarding dose of

drug.

Our study showed that 188(46.6%) have poor knowledge & 75(18.6%) have good knowledge about self-medication & 21(2.9%) had poor attitude, 391(97%) had good attitude & 36(9%) of participants were followed poor practice & 280(70%) were followed good practice.

In our study most of the participants have good practice (78%) & positive attitude (97%) toward responsible self-medication & poor knowledge 64.7% due to lack of Knowledge. In a study conducted by Susheela et. al [7] showed the similar findings that 98.5% have shown positive attitude but majority of individuals 57.8% were following irrational self-medication practice. There is a need to create awareness regarding practice of self-medication.

Concerning level of knowledge most of participants 261(65%) had poor knowledge and 46(11.4%) had good knowledge. This study is congruence with the study done by Susheela et.al., [7] which shows that majority of participants 215(53.3%) has poor knowledge. This may be due to lack of knowledge.

In the current study most of the participants 209(52%) agreed that self-medication is not safe in all age groups. In a study conducted by Susheela et.al., [7] showed a similar finding that majority of respondents 170(42.2%) agreed to the above statement. Sometimes self-medication is not safe in Neonates and geriatrics group. So, majority of individuals agreed to above statement.

In a study conducted by Abdullah et.al., [12] most of the participants 150(44.8%) agreed that Using OTC medicines as self-medication is safe when you use them correctly which was similar findings observed in our study as 163(40.4%). Participants in our study are aware about taking self-medication in right manner.

In our study most of the participants 153(38%) agreed that OTC medicines are convenient to obtain and use. These results were consistent with the study conducted by Abdullah et.al., [12] shows that 115(34.3%) of participants agreed to above statement.

In a study conducted by Susheela et.al., [7] shows that most of the participants 170(42.2%) agreed that self-medication under professional advice will give better outcomes which was similar findings observed in our study that 166(41.2%) participants agreed to above statement.

Concerning level of attitude most of participants 391(97%) had Positive attitude and 12(3%) had negative attitude. This study is congruence with the study done by Susheela et.al[7] which shows that majority of participants 397(98.5) had positive attitude.

In the current study most of the participants 224(55.6%) read the label of medication before use. This study is congruence with the study done by Abdullah et al [12] which shows majority of individuals 215(64.2%) always read the label of medication.

In a study conducted by Abdullah et.al [12] most of participants 239(71.3%) have always check the expiry date before purchasing the medication. The results of this study were in consistent with our study as 329(81.6%) always check expiry date of medication. This kind of practice is good and people are aware about not to use expired medicines.

In our study most of participants 362(89.8%) do not take drugs for long period without any medical

advice. These findings were similarly observed in study done by Susheela et.al., [7] which shows majority of participants 344(85.3%) do not take drugs for long period. Participants in our study are aware about need to consult the doctor instead of using medicine for long period without any medical advice.

The study conducted by Susheela et al. [7] revealed that a majority of the participants, specifically 333 individuals (82.6%), did not favor self-medication for any type of illness. Interestingly, our study yielded similar findings, with 377 participants (93.5%) stating that they do not prefer self-medication when faced with any form of illness.

Concerning level of practice regarding self-medication most of participants 314(77.9%) followed rational practice. These findings were in contrast to study done by Susheela et.al., [7] which shows 233(57.8%) participants followed irrational practice. There is a necessity to conduct awareness programs in view of practice regarding self-medication.

Among all respondents 46(11.4%) have good knowledge, 96(23.8%) have moderate Knowledge and 261(64.7%) have poor knowledge. Most of the individuals have positive attitude. More than half of the individuals are rational self-practice as shown in Table 3.

The study revealed that 97% of the participants exhibited a positive attitude and fair practice towards responsible self-medication. This finding is consistent with the study conducted by Susheela et al. [5]. However, more than half of the participants demonstrated poor knowledge, which aligns with the findings of a similar study conducted by Daifallah et al. [19].

These findings provide evidence to support the implementation of educational training programs on responsible self-medication. Such programs should target not only the general public but also practicing pharmacists and pharmacy students. It is anticipated that these initiatives will have a significant impact on promoting responsible self-medication practices in the future.

Furthermore, the study found that respondents' age, gender, and educational qualification were significantly associated with good knowledge, positive attitude, and rational practice towards responsible self-medication. This association is consistent with the findings observed in the study conducted by Susheela et al. [7], which also highlighted the influence of demographics on knowledge, attitude, and practice regarding self-medication.

LIMITATIONS:

As the study is based on a self-made questionnaire, it is important to acknowledge that the results are reliant on the responses provided by the study participants. This introduces the possibility of respondent bias, where participants may not provide genuine or accurate answers to certain questions. Respondent bias can occur due to various factors, such as social desirability bias (responding in a way that is perceived as socially acceptable) or recall bias (inaccurate recollection of past events or experiences).

To mitigate this potential bias, researchers often employ strategies such as ensuring anonymity and confidentiality, providing clear instructions for participants, and using validated questionnaire items. These

measures aim to create a comfortable and non-judgmental environment, encouraging participants to provide honest and reliable responses. Nonetheless, it is important to acknowledge the inherent limitations and potential biases associated with self-reported data in questionnaire-based studies.

CONCLUSION:

Overall, there is a positive attitude and fair practice among the population towards responsible self-medication which is a positive sign, but general population were lacking the knowledge about self-medication. Based on the study's findings, it is recommended to adopt an integrated approach to address the issues stemming from poor knowledge regarding self-medication. Furthermore, this study serves as a foundation for further research on this issue, highlighting the significance of the problem and emphasizing the need to address it. Future studies can delve deeper into specific aspects of responsible self-medication and explore additional factors influencing knowledge, attitudes, and practices related to self-medication. By recognizing and investigating this problem, valuable insights can be gained to improve healthcare practices and outcomes.

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AUTHORS CONTRIBUTION STATEMENT:

All the authors had full access to all data in study. Dr. B. Vyshnavi: Supervision, Accuracy of data analysis and interpretation, Review-original and final draft before submission. Bommysetty Lakshmi Priya: Conceptualization, Documentation, Methodology, Collection of data, Analysis and interpretation of data, writing review and editing the original draft and final version of manuscript. Chillakuru Thriveni: Conceptualization, Documentation, Methodology, Collection of data, Analysis and interpretation of data, Review. Lakkakula Roshnavi: Collection of data, Analysis and interpretation of data, Review. Shaik Sadiq: Collection of data, Analysis and interpretation of data.

CONFLICT OF INTEREST:

Conflict of interest declared none.

REFERENCES:

1. Medicens du Monde. THE KAP SURVEY MODEL (KNOWLEDGE, ATTITUDES & PRACTICES) 2011.
2. World Health Organization. A guide to developing knowledge, attitude and practice surveys. Geneva, Switzerland: World Health Organization, 2008.
3. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. WHO/EDM/QSM/ 00.1, 2000.

4. World Self-Medication Industry (WSMI). Responsible self-care and self-medication: a worldwide review of consumer surveys. Fernery-Voltaire: WSMI.
5. Tesfamarian S, Anand IS, Kaleb G, Berhane S, Woldai B, Habte Russom M. Self-medication with over the counter drugs, prevalence of risky practice and its associated factors in pharmacy outlets of Asmara, Eritrea. *BMC Public Health* (2019) 19:159.
6. Magadmi RM, Kamel FO, Hagraas MM, Alhmied HI, Aljuma'iy WH, Saqat DF, et al. Knowledge and attitudes regarding the self-use of pain medications in Saudi Arabia: A cross-sectional study. *J M Micros Ultrastruct* 2022; 10:15-9.
7. Susheela F, Goruntla N, Bhupalam PK, Veerabhadrapa KV, Sahithi B, Ishrar SM. Assessment of knowledge, attitude, and practice toward responsible self-medication among students of pharmacy colleges located in Anantapur district, Andhra Pradesh, India. *J Edu Health Promot* 2018; 7:96.
8. Gyawali S, Ravi Shankar P, Prasad Poudel P, Saha A. Knowledge, Attitude and Practice of Self-Medication Among Basic Science Undergraduate Medical Students in a Medical School in Western Nepal. *Journal of Clinical and Diagnostic Research*. 2015 Dec, Vol-9(12): FC17-FC22.DOI: 10.7860/JCDR/2015/16553.6988.
9. Bekele KM, Abay AM, Kidist A. Knowledge, Attitude, and Practice on Over-the-Counter Drugs Among Pharmacy and Medical Students: A Facility-Based Cross-Sectional Study. *Integrated Pharmacy Research and Practice* 2020;9 135– 14.
10. Rodney S, Dunagana F, Hazel P, Adams I. Responsible self-medication: perceived risks and benefits of Over-the-counter analgesic use. *Royal Pharmaceutical Society 2011 International Journal of Pharmacy Practice*, 19, pp. 236–245.doi: 10.1111/j.2042-7174.2011.00097.
11. Alduraibi RK, Altowayan WM. A cross-sectional survey: knowledge, Attitudes, and practices of self-medication In medical and pharmacy students. *BMC Health Services Research* (2022) 22:352.
12. Mehta RK, Sharma S. Knowledge, Attitude, Practice of self-medication among medical students. e-ISSN: 2320-1959,p-ISSN:2320-1940 volume 4, issue 1(jan- feb 2015), pp 89-96.