

# Evaluation of Knowledge, Attitude, and Practice (KAP) about Self-Medication among Nursing Students in a Tertiary Care Teaching Hospital in Northern India: A Cross-Sectional Questionnaire-Based Prospective Study

Dr. Bhanu Priya Singh<sup>1\*</sup>, Dr. Vikram Sharma<sup>2</sup>, Dr. Ajay Kumar<sup>3</sup>

<sup>1\*</sup>Assistant Professor, Department of Pharmacology, Shri Mata Vaishno Devi Institute of Medical Excellence (SMVDIME), Kakryal, Katra, Jammu & Kashmir, India.

<sup>2</sup>Senior Resident, Department of Pharmacology, SMVDIME, Kakryal, Katra, Jammu & Kashmir, India.

<sup>3</sup>Professor & Head, Department of Pharmacology, SMVDIME, Kakryal, Katra, Jammu & Kashmir, India.

**\*Corresponding Author**

Dr. Bhanu Priya Singh

Assistant Professor, Department of Pharmacology, Shri Mata Vaishno Devi Institute of Medical Excellence (SMVDIME), Kakryal, Katra, Jammu & Kashmir, India.

---

## ABSTRACT

**Background:** Self-medication is an expanding global public health concern, particularly among healthcare undergraduates who possess early academic exposure to pharmacological concepts. Nursing undergraduates represent the future frontline of clinical drug administration, patient compliance monitoring, and bedside therapy. Their independent health-seeking behaviours and personal drug utilization patterns directly influence institutional healthcare standards and the safety of patient counselling.

**Objectives:** To evaluate the Knowledge, Attitude, and Practice (KAP) regarding self-medication among undergraduate nursing students in a tertiary care teaching hospital in Northern India, to analyse associations with sociodemographic factors, and to identify the primary clinical drivers and therapeutic classes involved.

**Methods:** A descriptive, prospective, cross-sectional, questionnaire-based study was executed within the Department of Pharmacology in coordination with the affiliated nursing college infrastructure. Following provisional clearance from the Institutional Ethics Committee (IEC), Government Medical College, Jammu (Ref No: IEC/GMCJ/2026/2014, Cat-C, Protocol C-689), a pre-validated, structural, 26-item digital survey instrument was administered. Universal sampling captured a definitive cohort of 206 nursing undergraduates. Raw data were processed via descriptive and inferential statistics (Pearson's Chi-Square test) using SPSS 2.0 Version 26.0, with significance set at  $p < 0.05$ .

**Results:** Out of  $N=206$  participants, the definitive prevalence of self-medication within the preceding 12 months was 92.2% ( $n=190$ ). The study group had a mean age of  $21.42 \pm 1.45$  years, with a high proportion of females (82.5%,  $n=170$ ) and individuals from rural backgrounds (67.0%,  $n=138$ ). Theoretical knowledge assessments showed high baseline awareness: 98.5% ( $n=203$ ) accurately defined self-medication, 95.1% ( $n=196$ ) recognized that incomplete courses of antibiotics accelerate antimicrobial resistance (AMR), and 98.5% ( $n=203$ ) verified product expiration dates before use.

However, significant permissive attitudes were observed: 79.6% ( $n=164$ ) held the view that self-medication is acceptable for minor clinical conditions, and 45.1% ( $n=93$ ) believed herbal or alternative remedies are entirely free from toxicity risks. Fever and common cold/cough (89.5%,  $n=170$ ) were the leading clinical indications prompting self-care. Antipyretics (94.7%,  $n=180$ ) and systemic antibiotics (69.5%,  $n=132$ ) were the dominant therapeutic classes utilized. Previous prescriptions (67.9%,  $n=129$ ) served as the primary source of drug information. Advanced academic training (4th year) showed a significant statistical correlation with higher practice rates ( $\chi^2 = 8.52$ ,  $p = 0.036$ ).

**Conclusion:** The prevalence of self-medication is remarkably high among nursing undergraduates. While theoretical awareness regarding drug expiration and antibiotic resistance is strong, clinical practice patterns reveal significant issues with independent antibiotic use. This study highlights the need to introduce formal clinical pharmacology workshops, prescription compliance ethics, and antibiotic stewardship early into the nursing curriculum.

**Keywords:** Self-medication, Nursing Undergraduates, Knowledge-Attitude-Practice (KAP), Antibiotic Resistance, Healthcare Education.

**How to cite this article:** Singh BP, Sharma V, Kumar A. Evaluation of Knowledge, Attitude, and Practice (KAP) about Self-Medication among Nursing Students in a Tertiary Care Teaching Hospital in Northern India: A Cross-Sectional Questionnaire-Based Prospective Study. *Int J Drug Deliv Technol.* 2026;16(66s):1252-1258. DOI: 10.25258/ijddt.16.66s.132

---

## INTRODUCTION

Self-Medication defined by the World Health Organization (WHO) [2] as the selection and consumption of medicinal products by individuals to treat self-recognized illnesses or symptoms without professional physician consultation is a widespread public health phenomenon globally [8]. In modern healthcare delivery, responsible self-medication is acknowledged as an element of individual self-care that can alleviate structural pressure on overloaded primary healthcare systems [2]. However, inappropriate or unguided self-medication presents major clinical hazards, including hidden diagnostic signs, severe adverse drug events (ADEs), life-threatening drug-drug interactions, accidental toxicity, sub-therapeutic dosing, and the global spread of antimicrobial resistance (AMR) [11].

Undergraduate medical and nursing students occupy a unique position within this dynamic [12, 14]. As future healthcare professionals, they develop early access to drug directories, diagnostic literature, and clinical terminology. This academic exposure often provides a false sense of security regarding clinical decision-making, which can lead to independent drug choices before they acquire comprehensive training in applied clinical pharmacology and therapeutics [10].

While extensive literature focuses on medical (MBBS) curricula [5, 9, 13], rigorous prospective studies tracking the behavioural paradigms of nursing cohorts in Northern India remain sparse [1]. Nursing professionals form the frontline of bedside therapy administration, patient monitoring, and drug compliance education. Therefore, identifying their behavioural patterns regarding drug use is essential.

This prospective, cross-sectional inquiry was designed to evaluate the baseline Knowledge, Attitude, and Practice (KAP) landscape regarding self-medication among nursing students within a premier tertiary care teaching college in Northern India.

## METHODOLOGY

### Study Setting and Ethical Framework

This prospective, institution-based, cross-sectional investigation was conducted under the supervision of the Department of Pharmacology at the Shri Mata Vaishno

Devi Institute of Medical Excellence (SMVDIME), Kakryal, Katra, Jammu & Kashmir, India.

The investigative protocol was reviewed and granted ethical approval by the Institutional Ethics Committee (IEC), Government Medical College, Jammu (Registration with DHR No: EC/NEW/INST/2026/JK/0696; Registration with CDSCO No: ECR/454/Inst/JK/2013/RR-25). The study was classified under Category-C as per institutional Standard Operating Procedures (SoPs) and Indian Council of Medical Research (ICMR) ethical guidelines, registered under Protocol No: C-689 (Certificate Serial No: IEC/GMCJ/2026/2014).

### Study Group Selection and Inclusion Criteria

Data collection used a universal sampling approach targeting undergraduate nursing students across different academic levels (1st Year, 2nd Year, 3rd Year, 4th Year, and post-basic semesters) who had continuous access to clinical lecture formats during the 2026 academic calendar.

- Inclusion Criteria: Consenting undergraduate nursing students (B.Sc. Nursing) across the professional academic years who volunteered to participate.
- Exclusion Criteria: Students with pre-existing, physician-confirmed chronic medical conditions requiring long-term prescription therapies, those who had experienced acute systemic emergencies within the preceding month, and individuals who declined to provide explicit, written informed consent.

### Construction and Validation of the KAP Tool

The data collection tool was adapted from validated institutional survey frameworks [3, 5] and formatted into a comprehensive 26-item digital survey. To ensure linguistic and structural clarity, the questionnaire was pilot-tested on a baseline group of 15 students (whose

responses were excluded from the final analysis), demonstrating a strong Cronbach's alpha reliability coefficient of 0.84. The final 26-item questionnaire was organized into five thematic domains:

1. Sociodemographic Characteristics (6 items): Captured age, gender, ongoing academic year, geographic origin (rural/urban), family type, and monthly family income.
2. Knowledge Metrics (6 items): Evaluated definitions of self-medication, knowledge of Over-The-Counter (OTC) regulations, understanding of expiration dates, side effects, and risks associated with drug interactions.
3. Attitude Metrics (5 items): Tracked behavioural patterns and viewpoints on safety, cost-saving, and public healthcare regulations using a 3-point scale.
4. Practice Metrics (6 items): Checked active self-medication practices within the past 12 months, tracking specific drug classes, clinical conditions, source of the medication, and safety checks.
5. Motivational Variables (3 items): Documented underlying reasons for avoiding professional medical consults and responses to treatment failure.

#### Data Collection and Administration Workflow

Data collection took place over a designated academic interval. The questionnaire was distributed digitally during scheduled breaks. Participants received a comprehensive orientation detailing the objective of the

study, the voluntary nature of participation, and the anonymity of the data. No academic or financial incentives were provided.

#### Statistical Data Matrix Analysis

The completed survey papers were coded and entered into a Microsoft Excel spreadsheet, then verified for quality control. Statistical operations were performed using IBM SPSS 2.0 Statistics for Windows, Version 26.0 (Armonk, NY: IBM Corp). Continuous variables were expressed as Mean  $\pm$  Standard Deviation (SD), while categorical distributions were summarized as frequencies and percentages. Inferential statistics relied on the Pearson Chi-Square ( $\chi^2$ ) test to evaluate associations between demographic characteristics (such as academic seniority) and self-medication practices. Statistical significance thresholds were set at  $p < 0.05$ .

## RESULTS

#### Sociodemographic Architecture of Respondents

A total of 206 undergraduate nursing students completed the survey. The mean age of the participants was  $21.42 \pm 1.45$  years. The cohort showed a substantial female predominance (82.5%,  $n=170$ ), with a majority coming from rural regions (67.0%,  $n=138$ ) and living in nuclear family structures (81.1%,  $n=167$ ).

Comprehensive demographic metrics are presented in Table 1.

**Table 1: Sociodemographic Profile of the Undergraduate Nursing Cohort (N=206)**

| Demographic Parameter     | Stratification Category          | Frequency (n) | Percentage Weight (%) |
|---------------------------|----------------------------------|---------------|-----------------------|
| Age Distribution (Years)  | $\leq 21$ Years                  | 106           | 51.5%                 |
|                           | $> 21$ Years                     | 100           | 48.5%                 |
| Gender Distribution       | Female                           | 170           | 82.5%                 |
|                           | Male                             | 36            | 17.5%                 |
| Academic Standing Year    | 3rd Professional Year            | 100           | 48.5%                 |
|                           | 4th Professional Year            | 106           | 51.5%                 |
| Geographic Background     | Rural                            | 138           | 67.0%                 |
|                           | Urban                            | 68            | 33.0%                 |
| Type of Family            | Nuclear                          | 167           | 81.1%                 |
|                           | Joint / Extended                 | 39            | 18.9%                 |
| Monthly Family Income (₹) | Low Tier ( $< ₹20,000$ )         | 19            | 9.2%                  |
|                           | Mid-Tier ( $₹20,000 - ₹50,000$ ) | 110           | 53.4%                 |
|                           | Upper Tier ( $> ₹50,000$ )       | 77            | 37.4%                 |

#### Evaluation of Structural Knowledge Metrics

Regarding fundamental definitions, 98.5% ( $n=203$ ) of the students correctly identified what constitutes self-medication. However, only 71.8% ( $n=148$ ) understood the regulatory classification of Over-The-Counter (OTC)

drugs, and 28.2% ( $n=58$ ) demonstrated critical ambiguity regarding prescription-only legislation. Notably, 95.1% ( $n=196$ ) recognized that incomplete courses of antibiotics accelerate antimicrobial resistance (AMR).

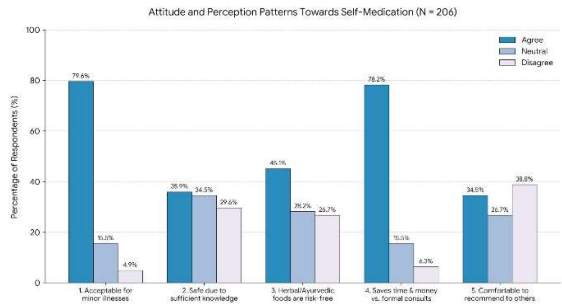
**Table 2: Participant Responses to Core Drug Knowledge Metrics (N=206)**

| Evaluated Knowledge Question Profile                                                     | Correct Response n (%) | Incorrect Response n (%) |
|------------------------------------------------------------------------------------------|------------------------|--------------------------|
| Correct definition of self-medication as independent drug use without a prescription.    | 203 (98.5%)            | 3 (1.5%)                 |
| Understanding that Over-the-Counter (OTC) drugs are sold legally without prescriptions.  | 148 (71.8%)            | 58 (28.2%)               |
| Inappropriate self-medication causes adverse drug reactions and masks diagnoses.         | 193 (93.7%)            | 13 (6.3%)                |
| Antibiotics should be taken exclusively under a valid professional medical prescription. | 200 (97.1%)            | 6 (2.9%)                 |
| Repeated use of high-dose painkillers (NSAIDs) can damage renal/GI systems.              | 184 (89.3%)            | 22 (10.7%)               |
| Incomplete therapeutic courses of antibiotics lead directly to resistance (AMR).         | 196 (95.1%)            | 10 (4.9%)                |

Assessment of Underlying Attitudinal Postures

The attitudinal assessment showed that 79.6% (n=164) of the students viewed self-medication as an acceptable and routine practice for minor clinical conditions. Meanwhile, 45.1% (n=93) held the belief that herbal or alternative formulations are entirely safe and free from toxic side effects.

Table 3: Attitude and Perception Patterns Towards Self-Medication Among Nursing Students (N=206)



Analysis of Self-Medication Practices and Behavioral Drivers

The active prevalence rate of self-medication within the trailing 12 months was 92.2% (n=190). The remaining 7.8% (n=16) reported avoiding the practice. The primary clinical triggers driving self-treatment were fever, common cold, and cough (89.5%, n=170), followed by tension headaches and general bodily pain (79.5%, n=151).

Figure 1: Major Clinical Indications Driving Self-Medication (n=190, Multiple Responses Allowed)

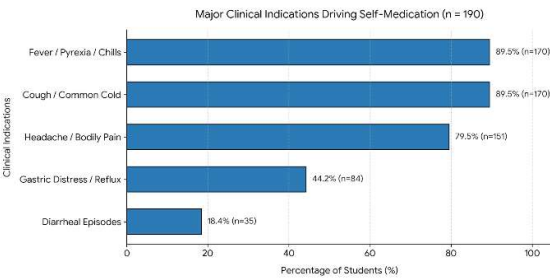
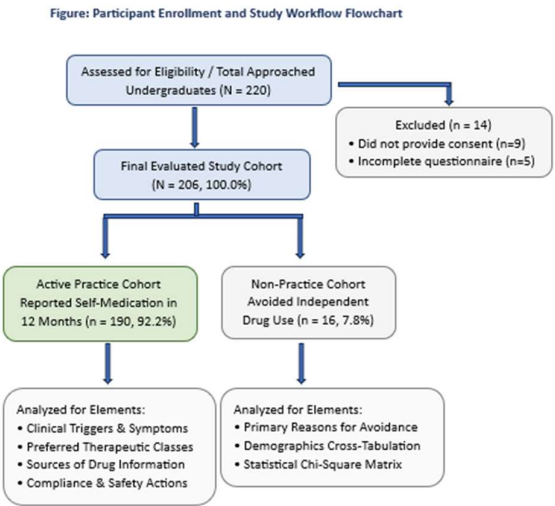


Figure 2: Primary Sources of Drug Information Used by Students (n=190)



Regarding specific medication classes, Antipyretics (mainly Paracetamol) were the most frequently used (94.7%, n=180), followed closely by Systemic Antibiotics (69.5%, n=132) and Analgesics/NSAIDs (67.9%, n=129).

Table 4: Distribution of Medication Classes Used for Self-Medication (n=190, Multiple Choices Permitted)

| Therapeutic Class Identity | Common Example Agents Utilized | Total Count (n) | Relative Sample Prevalence (%) |
|----------------------------|--------------------------------|-----------------|--------------------------------|
| Antipyretics               | Paracetamol / Acetaminophen    | 180             | 94.7%                          |

|                               |                                              |     |       |
|-------------------------------|----------------------------------------------|-----|-------|
| Antibiotics / Antimicrobials  | Azithromycin, Amoxicillin, Cefixime          | 132 | 69.5% |
| Analgesics / NSAIDs           | Ibuprofen, Diclofenac, Aceclofenac           | 129 | 67.9% |
| Cough Syrups / Antihistamines | Cetirizine, Levocetirizine, Dextromethorphan | 106 | 55.8% |
| Antacids / PPIs               | Pantoprazole, Ranitidine, Omeprazole         | 87  | 45.8% |
| Herbal / Ayurvedic Meds       | Tulsi syrups, Ashwagandha extracts, Churnas  | 53  | 27.9% |

Among the practicing group, 59.5% (n=113) reported that they always complete the full course of a medication, particularly when taking antibiotics, while 40.5% (n=77) acknowledged doing so only sometimes or never. If symptoms persisted after self-treatment, 77.9% (n=148) reported that they would then consult a qualified physician.

#### Cross-Tabulation and Inferential Statistics

Cross-tabulation using the Chi-Square ( $\chi^2$ ) test showed a statistically significant correlation between a student's

academic standing year and their frequency of self-medication practice ( $\chi^2 = 8.52$ ,  $p = 0.036$ ). Fourth-year students reported a higher frequency of independent drug use, which correlated with their advanced clinical exposure.

Conversely, parameters such as geographic origin (rural vs. urban), gender, and family income did not show statistically significant effects on self-medication habits within this cohort ( $p > 0.05$ ).

**Table 5: Chi-Square Assessment of Sociodemographic Associations with Self-Medication Practices (N=206)**

| Sociodemographic Variable Matrix | Category Subset | Active Practice (n=190) | Avoided Practice (n=16) | $\chi^2$ Value | p-value              |
|----------------------------------|-----------------|-------------------------|-------------------------|----------------|----------------------|
| Academic Standing Year           | 3rd Year        | 87                      | 13                      | 8.52           | <b>0.036</b>         |
|                                  | 4th Year        | 103                     | 3                       |                | <i>(Significant)</i> |
| Gender Stratification            | Female          | 157                     | 13                      | 0.02           | 0.887                |
|                                  | Male            | 33                      | 3                       |                | <i>(Non-Sig)</i>     |
| Geographic Background            | Rural           | 128                     | 10                      | 0.24           | 0.624                |
|                                  | Urban           | 62                      | 6                       |                | <i>(Non-Sig)</i>     |

#### DISCUSSION

The prospective analysis reveals an exceptionally high prevalence of self-medication (92.2%) among undergraduate nursing students at this tertiary teaching institution in Northern India. This finding exceeds rates reported in several previous regional assessments of medical education cohorts [1, 9, 13], suggesting that early proximity to clinical environments, paired with foundational lectures on disease management, frequently translates into high rates of self-prescription.

A primary finding of this study is the contrast between the students' strong theoretical knowledge and their self-reported clinical practices. While 95.1% of the respondents understood that incomplete antibiotic courses accelerate the emergence of antimicrobial resistance, 69.5% actively reported using systemic antibiotics without a current professional consultation.

Furthermore, 40.5% admitted that they do not consistently complete a full therapeutic course of antibiotics. This behaviour highlights a critical gap between academic knowledge and actual practice, where theoretical understanding of public health threats does not always prevent unsafe personal drug habits [4, 11].

The widespread practice of using historical prescriptions (67.9%) to guide new self-treatments is also concerning. This relies on the assumption that recurring symptoms share identical underlying pathologies, a practice that can mask alternative diagnoses and delay appropriate care [8].

The statistical analysis shows a significant relationship between advanced academic seniority (4th year) and increased self-medication frequency ( $p = 0.036$ ). This suggests that as students' progress through their training and spend more time in clinical rotations, their confidence in managing minor illnesses independently

increases, leading to a higher rate of self-prescription [3, 12].

Encouragingly, 92.2% of the surveyed students supported implementing stricter national regulations on over-the-counter medication access, and 89.3% expressed a willingness to attend educational programs on rational drug use [6, 7]. This positive attitude indicates strong institutional support for introducing targeted pharmacology workshops and antibiotic stewardship programs early in the nursing curriculum.

#### Study Limitations

This study has certain limitations. The data rely on self-reported questionnaires, which can introduce recall bias. Additionally, the study was conducted using a sample at a single tertiary institution, meaning the findings may not fully represent all nursing training centres across Northern India. Future research would benefit from multi-centre, long-term prospective studies across diverse educational settings.

### CONCLUSION & RECOMMENDATIONS

This study shows that while undergraduate nursing students understand the importance of healthcare regulations, their self-medication practices particularly regarding antibiotics reveal significant gaps in pharmacological safety. To address this, the following measures are recommended:

1. Curriculum Reform: Introduce applied clinical pharmacology, drug interaction safety, and antibiotic stewardship principles earlier in the nursing educational path.
2. Institutional Guidelines: Implement clear institutional policies and counselling services within campus health facilities to discourage self-prescription among students.
3. Educational Campaigns: Organize regular student-led workshops focused on the risks of irrational drug use and the long-term public health threats of antimicrobial resistance.

**Conflicts of Interest:** The authors declare no competing financial, personal, or institutional interests.

### REFERENCES

1. Kudiyar P, Rani S, Malhotra P. Knowledge, attitude and practice towards self-medication among nursing students in a teaching hospital of North India. *Indian J Pharm Pharmacol.* 2020;5(3):159-163. doi:10.18231/2393-9087.2018.0033.
2. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in

self-medication. Geneva: World Health Organization; 2000. WHO/EDM/QSM/00.1.

3. Alves RF, Precioso J, Becoña E. Knowledge, attitudes and practice of self-medication among university students in Portugal: A cross-sectional study. *Nord Stud Alcohol Drugs.* 2021;38(1):50-65. doi:10.1177/1455072520965017.
4. Shitindi L, Issa O, Poyongo BP, Horumpende PG, Kagashe GA, Sangeda RZ. Comparison of knowledge, attitude, practice and predictors of self-medication with antibiotics among medical and non-medical students in Tanzania. *Front Pharmacol.* 2024;14:1301561. doi:10.3389/fphar.2023.1301561.
5. Kumar N, Kanchan T, Unnikrishnan B, Rekha T, Mithra P, Venugopal A, et al. Perceptions and practices of self-medication among medical students in coastal South India. *PLoS One.* 2013;8(8):e72247. doi:10.1371/journal.pone.0072247.
6. Al-Qahtani AM, Alqahtani NS, Mannasaheb BA, Ghazwani EY, Shaikh IA, Abbag BF, et al. Self-medication related knowledge, attitudes, and practices among residents of Riyadh, Saudi Arabia: A community-based cross-sectional study. *Healthcare (Basel).* 2023;11(23):1-17.
7. Ali MD, Ahmad A, Lewis S, Kannan L, Sadek FA, Al Tawal ZA, et al. Evaluation of knowledge, attitude and practice about self-medication among adult population of Eastern Province, Saudi Arabia. *J Pharm Res Int.* 2022;34(27A):59-70.
8. Bennadi D. Self-medication: A current challenge. *J Basic Clin Pharm.* 2014;5(1):19-23.
9. Gupta YK, Nayak RP. Self-medication practices among undergraduate medical students in North India. *J Pharmacol Pharmacother.* 2014;5(2):136-139.
10. James H, Handu SS, Al Khaja KA, Ootom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. *Med Princ Pract.* 2006;15(4):270-275.
11. Rather IA, Kim BC, Bajpai VK, Park YH. Self-medication and antibiotic resistance: Crisis, current challenges, and prevention. *Saudi J Biol Sci.* 2017;24(4):808-812.
12. Sharma A, Oommen S, Topno I, Saya RP. Perceptions and practices of self-medication in healthcare and nonhealthcare university students in South India. *J Basic Clin Physiol Pharmacol.* 2015;26(6):633-640.
13. Mehta RK, Sharma S. Knowledge, attitude and practice of self-medication among medical students. *IOSR J Nurs Health Sci.* 2015;4(1):89-96.
14. Klemenc-Ketis Z, Hladnik Z, Kersnik J. Self-medication among healthcare and non-healthcare

Evaluation of Knowledge, Attitude, and Practice (KAP) about Self-Medication among Nursing Students in a Tertiary Care Teaching Hospital in Northern India: A Cross-Sectional Questionnaire-Based Prospective Study

students at University of Ljubljana, Slovenia. Med Princ Pract. 2010;19(5):395-401.