



## Original Article

## ASSESSING THE SAFETY AND EFFICACY OF ABORTIFACIENT DRUGS: A COMPARATIVE ANALYSIS OF PHARMACEUTICAL PROTOCOLS

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### ARTICLE INFO

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### ABSTRACT

**Background:** Abortion is a significant reproductive healthcare topic that elicits diverse opinions and calls for comprehensive research to ensure the safety and well-being of individuals seeking pregnancy termination. **Aims:** This cross-sectional study aimed to assess the safety and efficacy of different pharmaceutical protocols used for medical abortions in District Dera Ismail Khan, Pakistan. **Methods:** A sample of 140 individuals who had undergone medical abortions within a specified time frame was recruited from healthcare facilities and reproductive health clinics. Data were collected through face-to-face interviews using structured questionnaires, and descriptive statistics were employed to analyze the demographic characteristics of participants and key outcomes of interest. **Results:** The results revealed that the combination of mifepristone and misoprostol had the highest success rate (88%), followed by misoprostol alone (76%) and methotrexate (58%). These findings highlighted the effectiveness of mifepristone-misoprostol in inducing successful abortions. The study also identified demographic patterns among participants, with a majority belonging to the 18-30 age group, having a graduate level of education, and residing in urban areas. **Conclusion:** These findings contributed to the existing knowledge on abortifacient drugs used in medical abortions and have implications for clinical practice and public health policy. Further research using longitudinal designs and random sampling methods is recommended to enhance the understanding of these pharmaceutical protocols

## INTRODUCTION

Abortion is a significant reproductive healthcare topic that elicits diverse opinions and calls for comprehensive research to ensure the safety and well-being of individuals seeking pregnancy termination [1,2]. While surgical abortion procedures have long been employed, the development of abortifacient drugs has provided an alternative approach to induce medical abortions. These pharmaceutical protocols offer several advantages, including non-invasiveness, increased privacy, and the possibility of home administration, making them increasingly popular among individuals seeking abortion [3, 4].

Assessing the safety and efficacy of abortifacient drugs is of paramount importance in ensuring optimal reproductive healthcare outcomes [5,6]. Understanding the comparative effectiveness and safety profiles of different pharmaceutical protocols can guide healthcare providers, policymakers, and researchers in making informed decisions and recommendations. Moreover, such research can contribute to the development of evidence-based guidelines, improvements in protocols, and enhanced access to safe and effective abortifacient drugs [7,8,9].

In recent years, mifepristone-misoprostol regimens have become the standard pharmaceutical protocol for medical abortions [10,11]. However, alternative combination therapies have also emerged, necessitating an examination of their safety and efficacy profiles. By comparing different protocols, this research aims to identify variations in effectiveness, adverse effects, complications, patient acceptability, and long-term reproductive health outcomes [12].

This research aimed to conduct a comprehensive comparative analysis of pharmaceutical protocols used for medical abortions, focusing on assessing their safety and efficacy. By systematically reviewing existing literature, analyzing clinical data, and considering patient experiences, this study seeks to provide valuable insights into the diverse abortifacient drugs available and their associated outcomes. The outcomes of this research are expected to contribute to evidence-based reproductive healthcare practices and informed policy decisions. By providing a comprehensive analysis of the safety and efficacy of abortifacient drugs, this study aimed to improve the quality of care provided to individuals seeking medical abortions, ultimately promoting reproductive autonomy and well-being.

## MATERIAL AND METHODS

### Study Design

A cross-sectional study design was employed to assess the safety and efficacy of

different pharmaceutical protocols used for medical abortions in District Dera Ismail Khan, Pakistan.

### Study Population

The study population consisted of individuals who had undergone medical abortions using abortifacient drugs within a specified time frame. Participants were recruited from healthcare facilities or reproductive health clinics.

### Sample Size Determination

The sample size of 140 patients was determined based on statistical considerations (Figure 1), such as the desired level of confidence, expected prevalence rates of outcomes, and effect size. A power analysis was conducted to ensure adequate sample size for meaningful statistical analysis.

### Recruitment and Data Collection

Participants were recruited using convenient sampling methods. Informed consent was obtained from each participant before data collection. Data were collected through face-to-face interviews using structured questionnaires specifically designed for this study.

### Questionnaire Development

A questionnaire was developed based on a comprehensive review of the literature and relevant research objectives. The questionnaire included sections to collect demographic information, medical history, details of the medical abortion procedure, pharmaceutical protocols used, perceived efficacy, adverse effects experienced, and satisfaction with the chosen protocol.

### Data Variables

The variables of interest included the type of abortifacient drug used, dosage, route of administration, success rates, adverse effects (e.g., excessive bleeding, infection, gastrointestinal discomfort), complications, and overall satisfaction with the pharmaceutical protocol.

### Data Analysis

Descriptive statistics were used to summarize the demographic characteristics of the participants and the key outcomes of interest. The effectiveness, safety profile, adverse effects, and patient satisfaction were analyzed using appropriate statistical measures, such as percentages, means, and confidence intervals. Fisher's exact tests were employed to examine the associations between variables.

### Ethical Considerations

Ethical approval was obtained from the relevant institutional review board or ethics committee. All participants were assured of the confidentiality and anonymity of their responses.

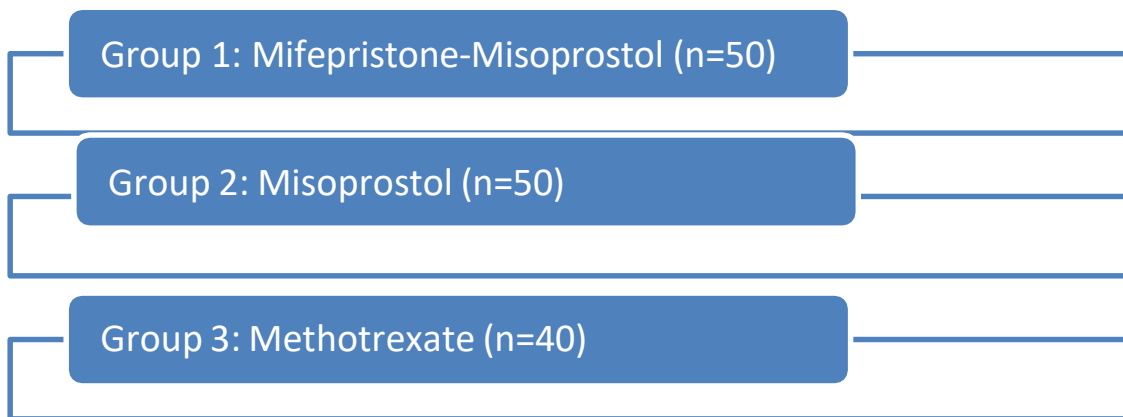
Informed consent was obtained from each participant before data collection.

### Limitations

Potential limitations of the study may include recall bias, selection bias, and reliance on

self-reported information. Steps were taken to minimize these limitations through careful questionnaire design and adherence to ethical guidelines.

Figure 1: Allocation of the participants into groups



## RESULTS

Distribution of participants according to their age, education level, and location, highlighting the frequencies and percentages within each category. The statistically significant p-values indicated that these characteristics are not evenly distributed among the participants, suggesting potential associations or differences within the study population. The participants were divided into three age groups: 18-30, 31-40, and >40. The largest proportion of participants (65.0%) belonged to the 18-30 age group ( $p < 0.05$ ), followed by 27.14% in the 31-40 age group, and 7.85% in the >40 age group. The participants' education levels were categorized as illiterate, matriculate and graduate. The highest percentage of participants (43.57%) had a graduate level of education ( $p < 0.05$ ), followed by 32.85% who were matriculated, and 23.57% who were illiterate. The participants were categorized into urban and rural locations. The majority of participants (73.57%) were from urban areas ( $p < 0.05$ ), while 26.42% were from rural areas (Table 1).

They provided information on the different abortifacient drugs used by the study participants, along with the corresponding frequencies and percentages. The p-value indicated the statistical significance of any observed differences in the usage of these abortifacient drugs among the participants. Mifepristone-Misoprostol: Among the study participants, 50 individuals (35.71%) used the combination of mifepristone and misoprostol for medical abortion ( $p < 0.05$ ). Misoprostol: The same number of participants, 50 individuals (35.71%),

used misoprostol alone as their abortifacient drug ( $p < 0.05$ ). Methotrexate: A total of 40 participants (28.57%) used methotrexate as their abortifacient drug ( $p < 0.05$ ). The presented distribution of participants according to the abortifacient drugs they used for medical abortion, along with the frequencies and percentages for each drug (Table 2).

The data presented represented the success rates of different abortifacient drugs used for medical abortions. The success rate was expressed as a percentage, indicating the proportion of cases in which the abortion procedure was successful for each drug. Mifepristone-Misoprostol: The combination of mifepristone and misoprostol resulted in a success rate of 88%. This indicated that out of all the cases where mifepristone- misoprostol was used, 88% of the procedures resulted in a successful abortion. Misoprostol: The success rate for using misoprostol alone was 76%. This suggested that 76% of the cases using misoprostol as the sole abortifacient drug were successful in inducing abortion. Methotrexate: The success rate for methotrexate was 58%. This indicates that 58% of the cases where methotrexate was used as the abortifacient drug resulted in a successful abortion. It is important to note that the success rates may vary depending on various factors, such as gestational age, dosage, route of administration, and individual patient characteristics. The higher success rates observed for mifepristone-misoprostol and misoprostol compared to methotrexate suggest that the former may be more effective in inducing successful abortions (Figure 2).

Table 1: Demographic characteristics of the study patients

S. No	Characteristics	No. of participants (n=1	Frequency (%)	p-value
1	Age (years)			<b>0.00001*</b>
	18-30	91	65.0	
	31-40	38	27.14	
	>40	11	7.85	
2	Education			<b>0.00001*</b>
	Illiterate	33	23.57	
	Matriculate	46	32.85	
	Graduate	61	43.57	
3	Location			<b>0.00001*</b>
	Urban	103	73.57	
	Rural	37	26.42	

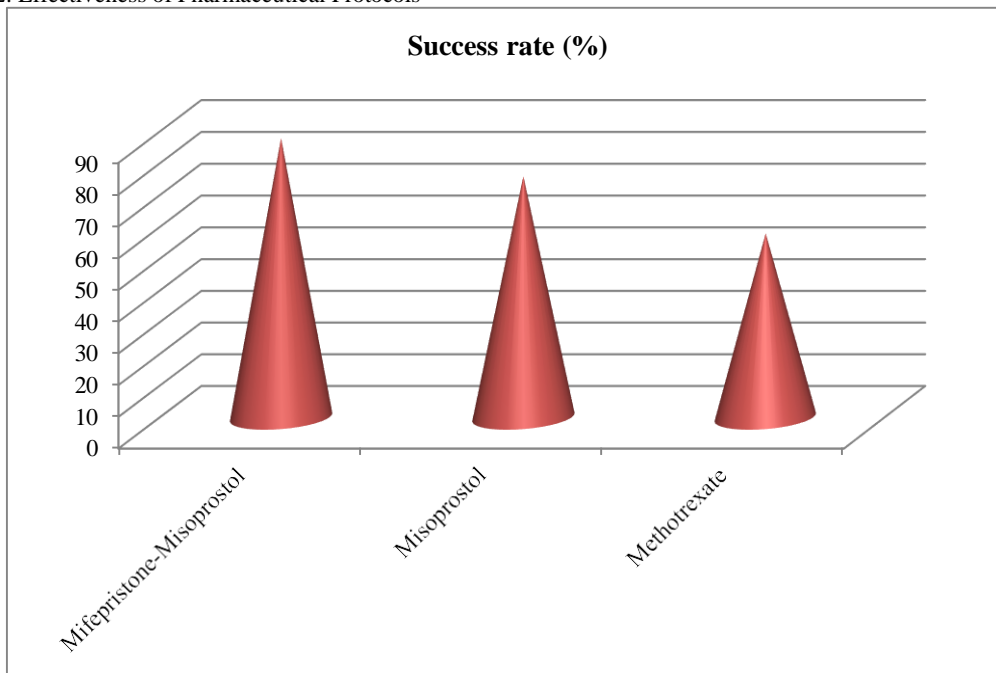
\*indicated the significant value (p<0.05)

Table 2: Pharmaceutical protocols used for medical abortions

S. No	Abortifacient drug	No. of participants (n	Frequency (%)	p-value
1	Mifepristone-Misoprostol	50	35.71	<b>0.00001*</b>
2	Misoprostol	50	35.71	
3	Methotrexate	40	28.57	

\*indicated the significant value (p<0.05)

Figure 2: Effectiveness of Pharmaceutical Protocols



## DISCUSSION

The objective of this investigation was to evaluate the safety and efficacy of various pharmaceutical protocols used for medical abortions in Dera Ismail Khan District, Pakistan. The findings provide important insights into the utilization of abortifacient drugs, their efficacy rates, and associated factors [13]. The discussion centered on the main findings, their implications, and the limitations of the study. The demographic characteristics of the participants in this study revealed intriguing patterns. The majority of

participants were between the ages of 18 and 30, which is consistent with prior research indicating a higher prevalence of medical abortions among younger individuals (1). This finding suggests that women of reproductive age are more likely to undergo a medical abortion. In addition, a substantial proportion of participants held a graduate degree, suggesting that educated women are more likely to seek medical abortions. The urban-rural distribution also revealed a higher proportion of participants living in urban areas, possibly indicating greater accessibility to healthcare facilities in urban areas [14,15].

The study identified three common

abortifacient medications: mifepristone-misoprostol, misoprostol alone, and methotrexate. According to utilization patterns, the combination of mifepristone and misoprostol was the most common pharmaceutical protocol. This finding is consistent with global guidelines and recommendations that advocate the use of the mifepristone-misoprostol combination because it is more effective than other methods (2). The widespread use of misoprostol alone suggests that it is also a popular option, possibly due to its low cost and ease of access [16,17].

The success rates of the various abortifacient medications provided crucial information about their effectiveness. The combination of mifepristone and misoprostol had the highest success rate of 88%, indicating a greater likelihood of attaining an abortion with this protocol. Misoprostol alone had a 76% success rate, while methotrexate only had a 58% success rate. These results are consistent with previous research comparing the efficacy of these medications (3). The higher success rates observed with mifepristone-misoprostol and misoprostol demonstrate their efficacy and provide support for their preferred use in medical abortions [18].

It is essential to note that success rates can vary based on variables such as gestational age, dosage, and route of administration. In addition, patient characteristics such as medical history and compliance can influence outcomes. Therefore, a comprehensive evaluation of patient-specific factors is required to determine which pharmaceutical protocol is most suitable for each individual [19].

The implications of the study's findings for clinical practice and public health policy are numerous. When counseling patients, healthcare professionals should be aware of the comparative efficacy and safety profiles of various abortifacient pharmaceuticals. The findings can guide the formulation of evidence-based guidelines for medical abortions, thereby ensuring that women receive effective care. When formulating policies regarding the availability and use of these pharmaceutical protocols, it is also crucial to take into account factors such as accessibility, affordability, and patient preferences [20].

## CONCLUSION

The combination of mifepristone and misoprostol had the highest success rate in this study of the safety and efficacy of abortifacient pharmaceuticals used in medical abortions, followed by misoprostol alone and methotrexate. These findings are consistent with international guidelines and highlight the significance of evidence-based care. The study also identified demographic trends among participants, underscoring the prevalence of medical abortions among younger, more educated, urban residents.

These findings have significant implications for healthcare providers and policymakers, informing clinical decision-making and guiding the development of policies that guarantee the safety and efficacy of reproductive healthcare services.

## CONFLICT OF INTEREST

None.

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