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MedPulse Spectrum

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Vibrant Insights in Medicine and Healthcare

Volume 1 Issue 1
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Editorial

TURNING A VISION INTO PAGES: THE CHALLENGES AND JOYS OF STARTING FRESH

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MedPulse Spectrum
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Welcome to the inaugural issue of MedPulse Spectrum. MedPulse Spectrum is an umbrella term that captures the pulse of innovation, advancements, and research developments across the entire health sciences. It is the first project of the JouEx Series, a journal of excellence in research and publishing that envisions becoming a premier symbol of excellence in scientific and academic publishing, setting unparalleled health and allied sciences standards. The launch of this issue marks a significant achievement and a milestone with a collective effort from a dedicated team stepping towards scientific excellence. As a challenging project, it is vital to share our values and the efforts that have gone into establishing this platform.

MedPulse Spectrum, the flagship journal of the Jouex Series, is a biannual, peer-reviewed, open-source journal that aims to promote and disseminate high-quality, peer-reviewed scientific evidence across a comprehensive scope that spans traditional areas like health sciences and allies, as well as emerging fields, rarely spotlighted in conventional journals, including digital health innovations, precision medicine, health informatics and integrative approaches that blend tradition with modern technology. By embracing these themes, the journal contributes to advancing medical sciences and addressing today's health challenges with actionable insights. Its commitment to an access model and ethical, inclusive research makes MedPulse Spectrum unique, offering a vibrant and transformative platform that captures the pulse of modern medical sciences.

While being a medical professional, corporate development's legal and strategic aspects, like securing a robust launch platform, were new territory. Launching a scientific journal requires a formal platform like an academic society, forum, or registered entity to ensure compliance and affiliation with accreditation and audit requirements set by accreditation agencies.[1] Initially, I explored partnerships with established platforms through memoranda of understanding to formally recognise the journal's launch. However, some conflicting and financial demands made the approach less feasible. Upon knowing that a registered research and development (R&D) or academic entity is the basic requirement. Henceforth, an R&D-based publishing corporation named SciTech Nexus® (registration no 0237863) was registered with the SECP, Pakistan.[2] It was an easy process with a commitment to compliance with regulatory rules and annual filing properly. Moreover, with an advisory board consisting of renowned subject specialists, we will offer to launch more journals in the future, keeping in mind that no conflicting or financial challenges will be provided to other researchers. Another challenge was establishing the journal's technical infrastructure and creating a platform for other researchers to launch their own journals. After thorough research, the Open Journal System (OJS) by the Public Knowledge Project (PKP) was the best option.

It was then meticulously developed to provide a seamless experience for editors, reviewers, and other researchers. [3] Learning how to install and troubleshoot OJS was not easy. It started with software installation on a local server like XAMPP MySQL. Being technically naive, local server installation offered less complication than coding in cPanel, which is itself a new blaze. Once the local server development was successfully done, it was migrated to the website domain following several steps and made visible to the audience.

Some technical hurdles were faced during the process. The Cascading Style Sheet (CSS) and Hypertext Preprocessor (PHP) coding were the most difficult and still need improvement.[4] The most time-consuming task was correcting the URL address by adding HTTP:// before the domain, www.jouex.com to http://www.jouex.com.[5] The next hurdle was configuring the email settings in the PHP file, which is unsuccessful for domain-based email; however, it works now with a Gmail address.[6] This does not end here. The tiresome part of the OJS PKP website setting was formulating policies and guidelines and then uploading them to the website. Similarly, templates like the title page, undertaking form, initial screening checklist, and reviewer form were quite challenging (https://jouex.com/index.php/medpulspect/Policies).
Establishing a journal successfully involves utilizing technology and promoting an ethical, high-standard editorial process.[7] The JouEx operation is based on a vision that aligns the global standards for high-quality, ethical,

and top-notch research through a rigorous double-anonymised peer review process, ensuring transparency and fairness. This is, infact, the backbone of every such platform. Therefore, the top-tier healthcare professionals have been carefully selected for the advisory board of the Jouex series through informed consent and formal agreement. Their primary role is to uphold compliance with accreditation standards, maintain the overall quality of journal(s), and ensure adherence to ethical publishing guidelines.

An important aspect of launching a journal is establishing a strong workflow team. A significant challenge was forming a dedicated and competent editorial team and ensuring the manuscripts were reviewed by subject experts. Developing a robust copy-editing and production workflow and seamless integration of various indexing agencies through APIs and plugins were key milestones. Through personal connections and the support of my professional and social circle, for which I am profoundly humbled and grateful, these challenges were successfully overcome, making this vision a reality.

Despite financial constraints and challenges, an important milestone was achieved that positioned MedPulse Spectrum for long-term success. After successfully acquiring a platform, OJS PKP, advisory board, and more, an international standard serial number (ISSN) will be obtained, and a Digital Object Identifier (DOI) will be allocated to each article.[8] A QR code will also be designed to enhance the readability of text for the first page of each published article.

To enhance the journal's visibility and credibility, we look forward to indexing with the Directory of Open Access Journals (DOAJ), cross-ref, and other reputed repositories after publishing the second issue, i.e., Jul-Dec 2025. In order to receive quality research articles, the social media platform will be utilised through monetisation. A more challenging step is establishing a virtual institute of R&D, which ensures the broadening of the journal's audience by facilitating international outreach. The indexation journey, registration of reviewers, prep-up of the launch of a new JouEx series project, and maintenance of a high standard of ethical research in health sciences will continue endlessly.

It would not have been possible without a driving force behind the enthusiasm, determination, support, and vision, energised by the unwavering support and encouragement from peers and mentors. I extend my heartfelt gratitude to the esteemed editorial team, contributors, and reviewers who have dedicated their time and expertise to uphold the journal's mission. Special recognition is due to TRIM Pakistan[9], a pillar of support, and to the late Prof. Dr Zahid Irfan Marwat, whose consistent guidance and encouragement inspired me to pursue academic excellence in research and development.

Slogan

JouEx: Excellence on every page.

MedPulse Spectrum: The vitality of medicine across global healthcare.

REFERENCE

1. Higher Education Commission, Pakistan. HEC Journals and Publication Policy 2024 [Internet]. Islamabad: HEC; 2024 [cited 2025 Feb 5]. p. 3. Available from: https://www.hec.gov.pk/english/services/faculty/journals/Documents/HEC%20Journals%20and%20Publication%20Policy%202024.pdf
2. SECP Pakistan. [cited 2025 May 21]. Available from: https://www.secp.gov.pk/
3. Public Knowledge Project. Open Journal Systems (OJS) [Internet]. Public Knowledge Project; [cited 2025 Jan 28]. Available from: https://pkp.sfu.ca/ojs/
4. Public Knowledge Project. Creating a Stylesheet [Internet]. PKP; [cited 2025 Jan 28]. Available from: https://docs.pkp.sfu.ca/designing-your-journal/en/creating-stylesheet
5. Stack Overflow**.** Add http prefix to URL when missing [Internet]. Stack Overflow; [cited 2025 Jan 28]. Available from: https://stackoverflow.com/questions/6240414/add-http-p refix-to-url-when-missing
6. Stack Overflow**.** OJS 3.0.1 is not sending any emails [Internet]. Stack Overflow; [cited 2025 Jan 28]. Available from: https://stackoverflow.com/questions/57703970/ojs-3-0-1-is-not-sending-any-emails
7. Knight S, Viberg O, Mavrikis M, Kovanović V, Khosravi H, Ferguson R, et al. Emerging technologies and research ethics: Developing editorial policy using a scoping review and reference panel. *PloS one. 20224; 19*(10): e0309715. https://doi.org/10.1371/journal.pone.0309715
8. ISSN International Centre. Requesting an ISSN [Internet]. ISSN International Centre; [cited 2025 Jan 28]. Available from: https://www.issn.org/services/requesting-an-issn/
9. Trim PK. **[**Internet]. Trim PK; [cited 2025 Jan 28]. Available from: https://www.trim.pk/

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Case Report

MANAGEMENT OF A RECTAL FOREIGN BODY WITH HISTRIONIC PERSONALITY DISORDER IN AN 8-YEAR-OLD BOY: A RARE CASE

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Background: Rectal foreign bodies are scarce in the paediatric population. They present with both a diagnostic dilemma and challenging management, particularly in children with attention-seeking behaviours or other mental illnesses. **Case:** We present here a case of an 8-year-old boy with histrionic personality disorder having a foreign rectal body that got inserted accidentally during a play, but could not be found upon clinical assessment. After confirming it with a plain abdominopelvic radiograph, a fluoroscopic examination under general anaesthesia confirmed the location of impaction. However, it passed spontaneously after oral laxatives. **Discussion:** Rectal foreign body in a paediatric patient with mental illness is quite a unique case. It is challenging at every step, i.e., clinical assessment, diagnosis, and treatment. In paediatric patients, rectal foreign bodies can have various causes, offer complex diagnoses, and can be managed without surgical intervention. **Conclusion:** Uncomplicated rectal foreign body in a mentally unstable paediatric patient is quite challenging to deal with. The diagnosis can be masked either due to mental illness or an insignificant clinical assessment. The management shall be provided with laxatives and kept under observation. The parents of such patients should be appropriately educated, and psychiatric evaluation should always be considered.

Keywords: rectal foreign body; paediatric; histrionic personality disorder; challenging

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INTRODUCTION

Rectal foreign bodies are extremely rare in the paediatric literature.[1] They present as a diagnostic challenge in the paediatric population. Children are usually quiet, unlike their adult counterparts, who could point to their exact location.[2] They have a history dating back to managing the first rectal foreign body in the 16th century. However, management has always been challenging, though it has evolved through the ages from a surgical approach to being removed endoscopically.[2]

Rectal bodies have been described in surgical literature in the 4th BC when the ancient Greeks practised rhaphanidosis to punish male adulterers.[3] Since then, there have been numerous case reports and case series on varied presentations of rectal foreign bodies inserted both accidentally and also to seek self-gratification. In Munchausen syndrome, a patient inserts a foreign body voluntarily to seek caregivers' attention.[4] Other causes may include assault, accidents, smuggling, and iatrogenic mishaps.[5] A detailed clinical history coupled with the physical examination of the patient suspected of a rectal foreign body, including the abdominal and digital rectal examination, is essential. A radiograph of the abdomen and pelvis can confirm the presence of a rectal foreign body.[6]

CASE PRESENTATION

We report an interesting case of an 8-year-old boy with a primary complaint of not passing stool for the last two days. The history of patients revealed insignificant information except for a fall upon a needle while playing one day before. He was stable vitally with a soft abdomen and no signs of tenderness in any quadrants. On per rectal examination, no impacted stools, no signs of bleeding, or any fistulous opening. His inner mucosa was intact, and there was no foreign body on digital examination. He was sent for an abdomen and pelvis X-ray that revealed a foreign body in the rectum (Figure 1-a). So there was suspicion that a foreign body might be penetrated through the anus and moved high in the rectum during the 24 hours, possibly due to patient mobility.

The patient was admitted to the surgical ward and planned for examination under anaesthesia and retrieval if possible. The next day, he was shifted to the operating room, where procto-sigmoidoscopy was

performed under general anaesthesia, but no foreign body was visualised up until the sigmoid Colon. The procedure ceased due to the lack of facility for endoscopic retrieval, and the patient was sent for a fluoroscopic examination that revealed a needle-shaped foreign body in the right upper quadrant (sub-diaphragmatic space) (Figure 1-b).

Post-procedure, he was prescribed laxatives (lactulose 10mg/kg) and was kept in the surgical ward under observation till the conclusion after consulting with the team. However, the next, the primary parent showed a faeces-stained needle passed by the patient. Neither of them had admitted this earlier. The patient also did not confirm the needle insertion. As part of the institutional protocol per the American Academy of Peadiatrics, the patient was sent for psychiatric evaluation, where the consultant psychiatrist diagnosed him with a histrionic personality disorder. He was scheduled for counselling sessions and was advised to follow up. The patient was discharged the same day after a re-examination (Figure 1-c), which appeared normal.

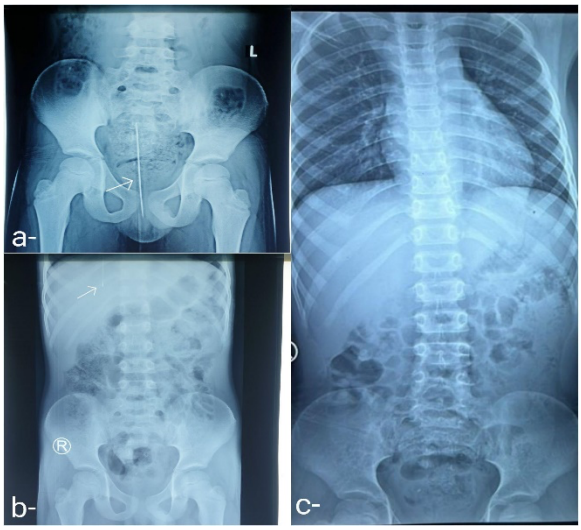

Figure-1: a) Foreign body in the rectum. b) foreign body in the right upper quadrant. c) no foreign body

DISCUSSION

Rectal body insertion has been discussed in surgical literature since the 16th century, and even before that, it has had different characteristic features in patients; however, in the paediatric population with histrionic personality disorder, it is not found in the literature.[1,3] This is its own because of a quite challenging initial assessment and effortless management.

Different factors of a patient with a retained rectal foreign body contribute to the challenging situation, making the diagnosis and management difficult. Some are ashamed of the disclosure of their history, and others with mental illness provide vague histories during initial assessment. Children might insert foreign bodies to seek attention, in contrast to their adult counterparts, who would do it for sexual gratification. Clinicians must speak respectfully with these patients to build a trust-based relationship.[6] Moreover, a detailed history of the patient and the physical assessment, including the abdominal and digital rectal examination, are not promising for diagnosing such a situation.[7] However, a plain abdominopelvic radiograph shall always be considered.[8]

There is ample literature on rectal foreign bodies, but the retrieval of the foreign body is still controversial. Also, the management of foreign rectal bodies varies from case to case. In a complicated case scenario, it is best removed with surgical intervention. In one study, it is mentioned to 'milk' the forging object distally by applying pressure to the external lower abdominal wall, pushing the object towards the exit route.[9] In another study, manual extraction under anaesthesia, combined with anal muscle relaxant, was advised for non-palpable anal foreign body retention in patients with weekend anal sphincters.[10] In the current case, it was passed out spontaneously with an oral laxative (Lactulose 10 mg/Kg) in a stable patient.

In paediatric patients, both laparoscopic and open techniques can be performed. However, endoscopic or laparoscopic removal is preferable over open surgery due to reduced tissue manipulation, less postoperative risk of complications, and quicker recovery.[11] Considering a diagnostic laparoscopy is more beneficial as it can be therapeutic for small and non-complicated foreign bodies if removed during the procedure. On the other hand, in cases of rectal perforation or other complications with large-sized foreign bodies, it can lead to open abdominal laparotomy with rectopexy and sphincter complex repair, resulting in optimal management.[12,13]

In our case, in a child with a histrionic personality disorder, an accidental insertion of the needle through the anus was confirmed by a plain radiograph that was passed out by oral laxative while under observation and was provided with psychiatric care.

CONCLUSION

Uncomplicated rectal foreign body in a mentally unstable paediatric patient is quite challenging to deal with. It can be child abuse in school-going children or an accidental insertion during a routine activity like play. The diagnosis can be masked either due to mental illness or an insignificant clinical assessment. However, a plain abdominopelvic radiograph should always be considered in such patients. The management shall be provided with laxatives and kept under observation until proven beneficial; otherwise, laparoscopy or open abdominal laparotomy shall be

considered. The parents of such patients should be appropriately educated, and psychiatric evaluation should always be considered.

REFERENCES

1. Forooghi M, Kamran H, Shahriarirad R. Management of Asymptomatic Perforation of a Pediatric Rectal Foreign Body into the Peritoneal Cavity Retrieved with Laparoscopy: A case report and literature review. Case Rep Med 2021;2021:5851967.
2. Cologne KG, Ault GT. Rectal foreign bodies: what is the current standard? Clin Colon Rectal Surg 2012;25(4):214–8.
3. Mantegazza C, Ferraro S, Biganzoli D, Destro F, Quitadamo P, Isoldi S, *et al*. Foreign body ingestion in children: Definition of a nomogram to predict surgical or endoscopic intervention. Dig Liver Dis 2024;56(2):312–21.
4. Moniruddin A, Faisal MFH, Chowdhury S, Hasan T, Rafique R, Banerjee G, *et al*. Sigmoid resection and primary anastomosis without any diversion or exteriorization for impacted foreign body in sigmoid Colon. KYAMC J 2020;10(4):214–8.
5. Khan SA, Davey CA, Khan SA, Trigwell PJ, Chintapatla S. Munchausen's syndrome presenting as rectal foreign body insertion: a case report. Cases J 2008;1(1):243.
6. Krencnik T, Jalsovec T, Klemenak M, Riznik P, Dolinsek J. Safety beyond Sight: Handheld Metal Detectors as Diagnostic Allies in the Management of Children Suspected to have Ingested Foreign Bodies. Diagnostics (Basel) 2024;14(4):356.
7. Mulita F, Theofanis G, Tchabashvili L, Drakos N, Maroulis I. Rectal foreign bodies: retained orange. Gastroenterol Rev (Prz Gastroenterol) 2021;16(4):392–3.
8. Grossi AELMT, Rodriguez JER, de Freitas Sousa AA, Machado DAB, de Albuquerque VVML, de Macedo FPPC. Management of unusual rectal foreign body - Case report and literature review. Int J Surg Case Rep 2022;94:107051.
9. Shaban Y, Elkbuli A, Ovakimyan V, Wobing R, Boneva D, McKenney M, *et al*. Rectal foreign body causing perforation: Case report and literature review. Ann Med Surg (Lond) 2019;47:66–9.
10. Asumanu E, Akwei CNA, Saeed A, Addai J. Management of retained trans-anal foreign body: a case report. Pan Afr Med J 2022;42:105.
11. Mulita F, Papadopoulos G, Tsochatzis S, Kehagias I. Laparoscopic removal of an ingested fish bone from the head of the pancreas: case report and review of literature. Pan Afr Med J 2020;36:123.
12. Chen T, M Siu J, Madan Y, Ma GW, Gill PJ, Carman N, *et al*. Pediatric esophageal foreign bodies: The role of socioeconomic status in ingestion patterns. Laryngoscope 2024;134(6):2945–53.
13. Li XL, Zhang QM, Lu SY, Liu TT, Li SL, Chen L, *et al*. Accidental ingestion of multiple magnetic beads by children and their impact on the gastrointestinal tract: a single-center study. BMC Pediatr 2024;24(1):5.

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Original Article

IMPACT OF PERIOPERATIVE QUALITY-INTERACTION ON PATIENT SATISFACTION UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

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Background: Patient satisfaction is a crucial indicator of healthcare quality that influences patients' outcomes and healthcare facility performance. In the surgical context, where anxiety prevails, the perioperative patient-healthcare worker (HCW) interaction matters a lot. This study assessed the association between perioperative quality-interactions and overall patient satisfaction among patients undergoing cholecystectomy at Qazi Hussain Ahmad Medical Complex (QHAMC), Nowshera. **Methods:** A cross-sectional study was conducted in the Department of Surgery, QHAMC, Nowshera, from July to October 2024. Through a consecutive sampling technique, 102 patients were asked questions based on a modified Clinician and Group-Consumer Assessment of Health Care Providers and Systems Adult Visit Survey. SPSS-22 was used for Mann-Whitney U test and Kruskal-Wallis H test. $p<0.05$ was considered statistical significance. **Results:** A total of 102 patients with a mean age of 44.0±11.84 years, of whom 33(32.4%) were male, participated in the study. Most patients rated their overall health as excellent 38(37.3%). Mann-Whitney U tests indicated a statistically significant difference between HCWs' encounters with patients ($p<0.05$). The Kruskal-Wallis test revealed a significant difference in age group and employment status with overall health rating and frequency of patient encounters with HCW, whereas the behaviour of HCW with employment status only ($p<0.05$). **Conclusion:** This relationship between perioperative quality-interaction and patient satisfaction undergoing laparoscopic cholecystectomy is significant. While pre- and intra-operative communication excels, postoperative follow-up and HCW soft skills require refinement. Our setups can align their practices with global patient-centred care standards by addressing demographic disparities and systemic gaps.

Keywords: perioperative; quality-interaction; patient satisfaction; surgery

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INTRODUCTION

Patient satisfaction is an essential indicator of healthcare quality, influencing clinical outcomes, patient compliance, and healthcare facility performance.[1] In surgical contexts, where anxiety and uncertainty are heightened, the quality of interactions between patients and surgical teams becomes critical.[2] The interaction is any contact or communication between the patient and healthcare workers (HCW). The perioperative period, spanning pre-, intra-, and postoperative phases, presents distinct opportunities for interactions that can alleviate patient concerns, build trust, and shape perceptions of overall care.[3]

Laparoscopic cholecystectomy is one of the most common general surgical procedures worldwide and carries specific interventional challenges, from explaining the indication and procedure to managing postoperative expectations.[4] Current research has mainly not addressed the fine-grained study of pre-operative interactions, leaving a gap in understanding their specific effect on patients' overall satisfaction with health.[1,5] Such a gap is especially prominent in areas such as Pakistan, where patients tend to delay presenting to care due to societal stigmatisation, ignorance, and culture.[6] Such delays deteriorate clinical states and disrupt patient-provider communication dynamics, necessitating investigating how customised pre-operative interactions may enhance patient perceptions.

This study aims to bridge these gaps by assessing the association between perioperative quality-interaction and overall patient satisfaction scores among the patients undergoing cholecystectomy at Qazi Hussain Ahmad Medical Complex (QHAMC), Nowshera KP. Employing a modified Clinician and Group-Consumer Assessment of Health Care Providers and Systems (CG-CAHPS) survey tailored to the current surgical context, this research seeks to delineate how interaction at each phase influences patient perceptions. The findings are anticipated to guide interventions enhancing surgical

team communication, ultimately improving patient-centred care in cholecystectomy and similar clinical environments.

METHODOLOGY

A cross-sectional study was conducted in the Department of Surgery, QHAMC Nowshera, KP. Patients were consecutively enrolled in single hospital sites from July to October 2024. A sample size of 102 was calculated by the "WHO sample size calculator" (version 2.0) using a confidence level of 95%, with an anticipated population proportion of 93% and 5% of absolute precision.[7] Informed consent was taken from participating patients. We got approval from the institutional review board. Our inclusion criteria were 18 years or older patients diagnosed with gallbladder disease upon ultrasound findings by the expert(s). Patients who were unable or refused to complete the questionnaire were excluded. The questionnaire had two parts: the first focused on the patient's demographics, including age, sex, and occupation. While the second part was devised from the CG-CAHPS Adult Visit Survey. Nine questions were asked from the patients about their experience and perception of the healthcare facility. Four questions were asked (Nominal, Q1-4) about patient interaction with HCW at different stages of perioperative care, with Yes/No options. The following four questions (Ordinal, Q5-8) collected information related to patients' satisfaction while interacting with HCWs or facilities. The ninth question asked about the patient's overall satisfaction with the HCW or facility.

The data analysis was done using SPSS v. 22. Through the Shapiro-Wilk test, preliminary assessments revealed that the data violated assumptions of normality. The Mann-Whitney U test was used to assess significant differences between binary nominal and ordinal variables (Gender, Q1-4 and Q5-8 of Table 2), respectively, including overall patient health rating, patient engagement with HCWs, satisfaction with surgical care, and communication quality with HCWs, for categorical independent variables with multiple groups (age group, employment status), associations with ordinal outcomes were analysed using the Kruskal-Wallis H test. A p-value threshold of <0.05 was applied to determine statistical significance.

RESULT

A total of 102 patients were recruited into the study, having a mean age of 44.0±11.84 years, among whom males were 33(32.4%) and females were 69(67.6%). Most patients were from the age group of 45 to 54 years, i.e., 28(27.5%) and employed, i.e., 44(43.1%), Table-1. Moreover, most patients rated their overall health as excellent 38(37.3%), Figure-1.

Table-1: Demographic frequencies of the participants (n=102)

Variable		Frequencies)	Percentages
Gender	Male	69	67.6
	Female	33	32.4
Age Group (years)	35 to 44	26	25.5
	45–54	28	27.5
	55–64	26	25.5
	65–74	16	15.7
	≥75r	6	5.9
Employment status	Employed	44	43.1
	Retired	25	24.5
	Unemployed	33	32.4

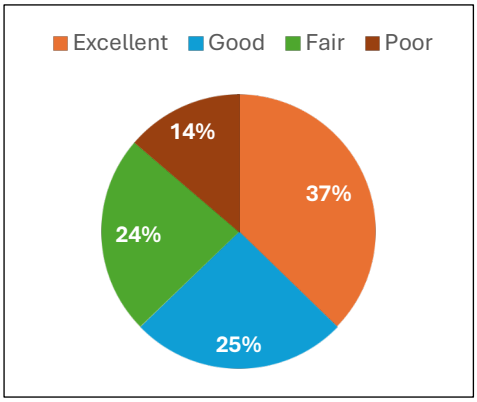

Figure-1: Overall health rating of the participants (n=102)

Most patients reported effective communication, 93(91.2%), and support, 92(90.2%), from the surgical team before and during the procedure, though post-surgery explanations and follow-up, 82(80.4%), showed room for improvement. Patients were extensively engaged 33(32.4%) throughout the experiences of undergoing the surgical procedure, and overall satisfaction with the healthcare facility of surgery was high, with 53(52.0%) satisfied versus 13(12.7%) very dissatisfied. Moreover, patients rated the HCWs' behaviour and communication as very good, 48(47.1%) and 49(48.0%), respectively, Table-2.

Mann-Whitney U tests indicated statistically insignificant differences between male and female patients in their rating of the HCWs' encounters (frequency, behaviour, communication, overall health, or satisfaction with surgeons as $p>0.05$ for all comparisons). Whereas HCW encounters with patients revealed statistically significant differences between patients who reported effective pre- and pari-surgical communication by the surgeon's team (yes group) and those who did not (No group) across all ordinal outcomes ($p<0.05$). Patients in the NO group consistently rated their experiences lower than those in the Yes group. Table-3.

Table-2: Frequencies and percentages of the questions used in the study

Q. No	Questions	Frequency	Percent
1	**Before surgery, did the surgeon's team effectively communicate essential information, provide clear preparation instructions, and listen to your concerns?**		
	Yes	93	91.2
	No	9	8.8
2	**Did your surgeon keep you well-informed during your surgery phase and help you feel at ease?**		
	Yes	92	90.2
	No	10	9.8
3	**Did the anaesthesiologist clearly explain the anaesthesia process, answer your questions, and make you feel comfortable?**		
	Yes	89	87.3
	No	13	12.7
4	**After your surgery, did your surgeon and their team adequately explain recovery expectations, follow up on your care, and address your concerns?**		
	Yes	82	80.4
	No	20	19.6
5	**How would you rate the overall frequency of your encounters with HCWs?**		
	Minimal Engagement	9	8.8
	Limited Engagement	10	9.8
	Moderate Engagement	13	12.7
	Regular Engagement	20	19.6
	Frequent Engagement	17	16.7
	Extensive Engagement	33	32.4
6	**Overall, how satisfied are you with the care provided during the surgical procedure?**		
	Very Satisfied	29	28.4
	Satisfied	53	52.0
	Dissatisfied	7	6.9
	Very dissatisfied	13	12.7
7	**How would you rate the overall behaviours of the HCWs during your encounter(s)?**		
	Very Good	48	47.1
	Good	34	33.3
	Average	9	8.8
	Bad	8	7.8
	Very Bad	3	2.9
8	**How would you rate the overall communication of the HCWs?**		
	Very Good	49	48.0
	Good	35	34.3
	Average	6	5.9
	Bad	6	5.9
	Very Bad	6	5.9
	Total	102	100.0

The Kruskal-Wallis test revealed significant differences in overall health ratings across age groups, H(4)=12.09, p=0.017, and in the frequency of patients encountering HCW, H(4)=9.91, p=0.42. Similarly, overall health rating, frequency of encounter with, and behaviour of HCWs resulted in significant differences across employment status, H(2)=11.01, p=0.004, H(2)=11.10, p=0.004 and H(2)=9.53, p=0.009, respectively, Table-4.

Table-3: Mann-Whitney U test results across grouping variables

Ordinal Variable		N	Overall health rating				Frequency of encounters with HCWs				Behaviour of HCWs				Communication of HCWs			
			Median (IQR)	95% CI Min-Max	U	*P*	Median (IQR)	95% CI Min-Max	U	*p*	Median (IQR)	95% CI Min-Max	U	*p*	Median (IQR)	95% CI Min-Max	U	*P*
Gender	Male	33	2 (2)	1.8–2.6	1109	0.828	4 (3.5)	3.5–4.8	1123	0.978	1 (2)	1.5–2.4	1135	0.978	1 (1)	1.4–2.4	1085	0.681
	Female	69	2 (2)	1.9–2.4			4 (3.0)	3.9–4.5			2 (1)	1.6–2.0			2 (1)	3.9–4.7		
Pre-Surgical	Yes	93	2 (2)	1.9–2.2	60	0.00	5 (2.5)	4.3–4.8	00	0.00	1 (1)	1.5–1.8	31	0.00	1 (1)	1.5–1.8	37	0.00
	No	9	4 (0.5)	3.4–4.1			--	--			4 (2)	3.3–4.7			5 (1.5)	3.4–5.2		
Surgery Phase	Yes	92	2 (2)	1.8–2.2	115	0.00	5 (2)	4.1–4.8	90	0.00	1 (1)	1.5–1.9	62.50	0.00	1 (1)	1.5–1.9	70	0.00
	No	10	3.5 (1)	3.1–3.9			--	--			3.5 (1)	3.1–3.9			3.5 (1)	3.1–3.9		
Anaesthesiologist	Yes	89	2 (2)	1.8–2.3	372	0.031	5 (2)	4.0–4.8	247	0.001	1 (1)	1.6–2.1	498	0.383	1 (1)	1.7–2.2	545	0.715
	No	13	3 (1)	2.2–3.2			--	--			2 (0.5)	1.5–2.2			2 (1)	1.4–2.0		
Post-Surgical	Yes	82	2 (2)	1.9–2.4	796	0.833	5 (3)	3.9–4.7	640	0.120	2 (1.2)	1.7–2.2	690	0.238	2 (1)	1.7–2.2	710	0.314
	No	20	2 (2)	1.6–2.5			--	--			1.5 (1)	1.3–1.7			1.5 (1)	1.3–1.7		

Table-4: Kruskal-Wallis Test of multivariate ordinal variables.

Ordinal Variable		N	Overall health rating			Frequency of encounters with HCWs			Behavior of HCWs			Communication of HCWs		
			Mean Rank	*H*	*p*	Mean Rank	*H*	*p*	Mean Rank	*H*	*p*	Mean Rank	*H*	*P*
Age group	35–44	26	46.1	12.09	0.017	54.8	9.91	0.042	48.6	6.82	0.146	49.6	7.18	0.127
	45–54	28	51.1			50.6			55.8			55.8		
	55–64	26	46.0			54.1			48.1			46.7		
	65–74	15	73.4			34.6			61.7			62.1		
	≥75	6	45.0			74.6			31.3			32.0		
Employment status	Employed	44	40.9	11.01	0.004	61.8	11.10	0.004	43.1	9.53	0.009	43.7	8.07	0.18
	Retired	25	61.4			48.6			51.6			52.1		
	Unemployed	33	58.1			40.0			62.6			61.5		

DISCUSSION

This study demonstrated a significant association between perioperative quality-interaction and patient satisfaction among laparoscopic cholecystectomy patients at QHAMC. The overall rating of the patients about their health revealed a mixed perception, yet most of them rated 'excellent', i.e., 37%. These findings align with prior research linking effective provider communication to improved patient satisfaction in surgical settings.[8] While pre-operative and intraoperative communication received a high satisfaction rating (91.2%–87.3%), postoperative explanations (80.4%) revealed gaps, suggesting areas for improvement, as care is often deprioritised due to systemic constraints.

A significant number of patients, i.e., 91.2%, affirmed that the surgical team effectively communicated pre-operative information. This aligns with evidence that structured pre-operative counselling reduces anxiety and enhances compliance.[9] However, the 8.8% who reported inadequate communication (n=9), their experiences rated significantly lower across all ordinal outcomes. This dichotomy suggests that while pre-operative communication is largely successful, even small oversight can detrimentally impact satisfaction, particularly in settings like Pakistan, where delayed presentations amplify patients' vulnerability.[10] Standardising pre-operative checklists could mitigate such risks.

During surgery, 92.2% felt well-informed by the surgeons, and 87.3% praised the anaesthesiologists' interaction. However, 12.7% dissatisfied with anaesthesia explanations reported poorer HCW behaviour and communication ratings, though these differences were non-significant. This contrasts with the studies emphasising anaesthesia communication as pivotal for trust-building.[11] The non-significance here may reflect small subgroup sizes of cultural factors where patients hesitate to critique authority figures.[12]

Only 80.4% of the patients felt adequately informed post-surgery. This aligns with global trends where postoperative care is fragmented.[13] Notably, the 'no' group (n=20) rated HCW behaviour and communication lower, though differences were non-significant (p>0.05). This suggests systemic issues, such as understaffing or time constraints, rather than individual shortcomings. Implementing structured discharge protocols could bridge this gap.[14]

Contrary to studies highlighting gender disparities in surgical care[15], this study found no significant differences between male and female patients. This may reflect gender-neutral communication protocols or cultural norms where Pakistani patients prioritise respect for HCWs over gendered critiques. Further qualitative research is needed to explore this paradox.

Age and employment status significantly influenced satisfaction. Older patients (45–54 years) and employed individuals reported higher satisfaction with p=0.004. Conversely, unemployed patients rated encounters lower, mirroring socioeconomic disparities in healthcare access.[16] Retired individuals, despite their age, reported moderate satisfaction (mean rank 61.4), suggesting that financial security or health literacy may buffer communication challenges. These findings advocate for targeted support for vulnerable groups, such as unemployed patients, who constituted 32.4% of the sample.

While our cross-sectional design and reliance on self-reported data limit causal conclusions and introduce recall bias, applying robust nonparametric analyses ensured insights despite non-normal distribution. Future longitudinal studies with embedded qualitative interviews would better elucidate satisfaction trends and explain why some patients experience less satisfaction after surgery. To address the identified gaps, we recommend standardising postoperative follow-up through post-discharge calls or digital reminders, training HCWs in empathetic, culturally sensitive communication, and implementing tailored strategies for younger and unemployed patients. Moreover, the modified CG-CAHPS shall be checked for item analysis, and a tailored tool shall be designed to monitor and enhance patient satisfaction continuously.

CONCLUSION

This study highlights the important relationship between perioperative quality-interaction and patient satisfaction in laparoscopic cholecystectomy. While pre- and intra-operative communication excels, postoperative follow-up and HCW soft skills require refinement. Our setups can align their practices with global patient-centred care standards by addressing demographic disparities and systemic gaps.

REFERENCE

1. Ferreira DC, Vieira I, Pedro MI, Caldas P, Varela M. Patient satisfaction with healthcare services and the techniques used for its assessment: a systematic literature review and a bibliometric analysis. Healthcare (Basel) 2023;11(5):639. DOI: https://doi.org/10.3390/healthcare11050639
2. Shebl MA, Toraih E, Shebl M, Tolba AM, Ahmed P, Banga HS, *et al*. Pre-operative anxiety and its impact on surgical outcomes:

A systematic review and meta-analysis. J Clin Transl Sci 2025;9(1):e33. DOI: https://doi.org/10.1017/cts.2025.6
3. Salazar Maya ÁM. Nursing Care during the Perioperative within the Surgical Context. Invest Educ Enferm 2022;40(2):e02. DOI: https://doi.org/10.17533/udea.iee.v40n2e02
4. Toğaç HK, Yılmaz E. Effects of pre-operative individualised audiovisual education on anxiety and comfort in patients undergoing laparoscopic cholecystectomy: randomised controlled study. Patient Educ Couns 2021;104(3):603–10.
5. Ayele TT, Negash TT, Oumer KE, Mekuanint A, Teshome D, Fenta E, et al. Patients' satisfaction and associated factors towards pre-operative informed consent process: A cross-sectional study. Ann Med Surg (Lond). 2022;79:104104. DOI: https://doi.org/10.1016/j.amsu.2022.104104
6. Omer S, Zakar R, Zakar MZ, Fischer F. The influence of social and cultural practices on maternal mortality: a qualitative study from South Punjab, Pakistan. Reprod Health. 2021;18(1):97. DOI: https://doi.org/10.1186/s12978-021-01151-6
7. Myles PS, Williams DL, Hendrata M, Anderson H, Weeks AM. Patient satisfaction after anaesthesia and surgery: results of a prospective survey of 10,811 patients. Br J Anaesth 2000; 84(1):6–10.
8. Trinh LN, Fortier A, Kain ZN. Primer on adult patient satisfaction in perioperative settings. Perioper Med (Lond) 2019;8:11. DOI: https://doi.org/10.1186/s13741-019-0122-2
9. Jones S, Alnaib M, Kokkinakis M, Wilkinson M, St Clair Gibson A, Kader D. Pre-operative patient education reduces length of stay after knee joint arthroplasty. Ann R Coll Surg Engl 2011;93(1):71–5. DOI: https://doi.org/10.1308/003588410X12771863936765
10. Irfan FB, Irfan BB, Spiegel DA. Barriers to accessing surgical care in Pakistan: healthcare barrier model and quantitative systematic review. J Surg Res. 2012;176(1):84–94. DOI: 10.1016/j.jss.2011.07.046
11. Rhim HC, Schon JM, Xu R, Nolan D, Ahn J, Short K, et al. Prehabilitation for Patients Undergoing Elective Foot and Ankle Surgery: A Contemporary Review. Foot Ankle Orthop. 2024;9(2):24730114241255136. DOI: https://doi.org/10.1177/24730114241255136
12. Coombs NC, Campbell DG, Caringi J. A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. BMC Health Serv Res 2022;22(1):438. DOI: https://doi.org/10.1186/s12913-022-07829-2
13. Cham S, Wen T, Friedman A, Wright JD. Fragmentation of postoperative care after surgical management of ovarian cancer at 30 days and 90 days. Am J Obstet Gynecol 2020;222(3):255.e1–255.e20. DOI: 10.1016/j.ajog.2019.09.005
14. Cadel L, Guilcher SJT, Kokorelias KM, Sutherland J, Glasby J, Kiran T, et al. Initiatives for improving delayed discharge from a hospital setting: a scoping review. BMJ Open. 2021;11(2):e044291. DOI: 10.1136/bmjopen-2020-044291
15. Chen HH, Chen YM, Lai KL, Hsieh TY, Hung WT, Lin CT, et al. Gender difference in ASAS HI among patients with ankylosing spondylitis. PLoS One 2020;15(7): e0235678. DOI: https://doi.org/10.1371/journal.pone.0235678
16. Naseer M, Zahidie A, Shaikh BT. Determinants of patient's satisfaction with health care system in Pakistan: a critical review. Pak J Public Health 2012;2(2):52–61.

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Original Article

FREQUENCY OF MATERNAL COMPLICATIONS OF GRAND MULTI-PARITY IN WOMEN UNDERGOING DELIVERIES IN A TERTIARY CARE SETUP OF KHYBER PAKHTUNKHWA, PAKISTAN

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Background: Grand multi-parity bears a set of complications. The relationship between obstetric complications and parity has been studied extensively, with inconsistent findings, particularly in the Pakistani context. Therefore, this study was conducted to determine the frequency of maternal complications in grand multiparous women undergoing deliveries. **Methods:** After the approval of the ethical review board, this descriptive cross-sectional study was conducted from June 2022 to February 2023 in the Obstetrics and Gynaecology Department, Ayub Teaching Hospital, Abbottabad. Through non-probability consecutive sampling, 170 grand multipara women were enrolled in this study. They were managed in the department and were observed for the development of complications such as pregnancy-induced hypertension, placenta previa, pre-mature rupture of membranes, and placental abruption. **Results:** The most common complication was pregnancy-induced hypertension, 11(6.47%), followed by placenta previa, 10 (5.88%), pre-mature rupture of membranes, 7(4.12%), and placental abruption, 5 (2.94%). No statistically significant association was observed when the complications were stratified according to age and parity of patients (p>0.05). **Conclusion:** Grand multi-parity is associated with a number of obstetrical complications, with pregnancy-induced hypertension at the top. The antenatal care of these patients should be designed in a way to reduce the occurrence of these complications.

Keywords: Grand multi-parity; complication; Pakistan

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INTRODUCTION

Grand multi-parity (GMP) is defined as a woman who has conceived five or more times with a gestational age of 20 weeks, irrespective of the outcome.[1] Bethel Solomons, in 1934, introduced this term and called it "dangerous multipara. "[2] Its incidence varies region-wise. In developing countries, it is still a significant cause of maternal complications and increased fatalities, with an incidence range of 10–30%.[3,4] Moreover, it bears adverse outcomes leading to socio-economic implications for the mother, family, and health systems.[5]

Literature also suggests that GMP complications depend on region, socio-economic factors, access to healthcare services, culture, religion, and the desires of large families.[1] In developing countries with limited resources, like Pakistan, Bangladesh, and India, literature has proven that the complications are included but not limited to pregnancy-induced hypertension (PIH), gestational diabetes, post-partum haemorrhage (PPH), placenta abruptio, and pre-mature rupture of uterine membrane (PROM).[6] However, in high-resource settings, some complications like uterine rupture showed an association with GMP.[7]

In Pakistan, Akhtar R *et al*, retrieved one one-year record of 680 GMP patients in which 15% of GMP had hypertension, diabetes 10.6%, and antepartum haemorrhage 6.2% annually.[8] In India, Afzal A *et al*, studied 2320 cases of deliveries having 5.76% of GMP. She reported anaemia as the highest 68% presentation among GMP, whereas placenta previa at 7%, placenta abruptio at 5.9%, diabetes at 5.8%, and hypertension at 10%.[9] In Malaysia, Nordin NM *et al*, included 237 GMP having hypertension at 16.9%, anaemia at 6.3%, and PROM at 1.3%.[10]

Considering the aforementioned details, GMP complications are multifactorial, such as region, cultural differences, and availability of resources. It is imperative to know and present to the Obstetricians of the northern region of Pakistan the most prevalent complications of GMP; therefore, this study aims to determine the frequency of maternal complications of GMP in women undergoing deliveries.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology unit C,

Ayub Teaching Hospital, Abbottabad, from June 2022 to February 2023 after getting approval from the ethical review board. The sample size for this study was 170, calculated using the "WHO software for sample size calculation" with a confidence level of 95%, the anticipated proportion of population, i.e., placental abruption of 12.6%[8], and absolute precision of 5%.

Through non-probability consecutive sampling, GMP women aged between 30 and 49 years were included in the study. Patients with essential hypertension, chronic and malignant disorders, or any known bleeding disorder were excluded.

Patients presenting to the outpatient departments and emergency Obstetrics and Gynaecology unit C of Ayub Teaching Hospital, Abbottabad, were included in the study after inclusion criteria were met and informed consent was obtained. These selected patients were booked in the antenatal clinic. At the 36th week of gestation, the GMP women were evaluated for complications like placenta previa, PIH, PROM, and placental abruption by a senior obstetrician. All information was noted in a pro forma by the principal researcher herself.

Data was analysed using SPSS-21. Categorical variables like placenta previa, PIH, PROM, and placental abruption were described as frequencies and percentages. Qualitative variables, like age, parity, and blood pressure, were described as Mean±SD. Data was stratified by age and parity with respect to complications. A chi-square test at 5% was applied to determine the significant difference in complications by age and parity.

RESULTS

The study enrolled 170 grand multipara women with a mean age of 37.40±3.88 years, Table-1.

The frequency of PIH, placenta previa, PROM, and placental abruption in the study was 11(6.47%), 10(5.88%), 7(4.12%), and 5(2.94%), respectively, Table-2.

No statistically significant association was found when the complications were stratified according to age and parity of study participants. However, 6 cases of PIH and 4 cases of Abruptio Placentae were found in women over 37 years of age. Placenta previa and PROM were documented at an early age, i.e., less than 37 years, Tables-3 and 4.

Table-1: Descriptive statistics of the study population

Variable	Mean±SD	Minimum	Maximum
Age of patients	37.40±3.88	31	44
Parity of patients	6.89±1.40	5	9
Systolic Blood Pressure	132.44±8.98	120	155
Diastolic Blood Pressure	75.96±5.24	70	96

Table-2: Presence or absence of different conditions among the study sample (n=170)

Variables		Frequencies	Percentages
	Present	11	6.47
Pregnancy Induced Hypertension	**Absent**	159	93.53
Placenta Previa	**Present**	10	5.88
	Absent	160	94.12
Pre-mature rupture of membranes	**Present**	7	4.12
	Absent	163	95.88
Abruptio Placentae	**Present**	5	2.94
	Absent	165	97.06

Table-3: Cross-tabulation of age and complications of grand multi-parity

Condition incidence	Age		Total	*p*
	<37	>37		
Pregnancy Induced Hypertension				
Present	5	6	11	0.69
Absent	82	77	159	
Placenta Previa				
Present	6	4	10	0.56
Absent	81	79	160	
Pre-mature rupture of membranes				
Present	5	2	7	0.27
Absent	82	81	163	
Abruptio Placentae				
Present	1	4	5	0.16
Absent	86	79	165	

$p \leq 0.05$

Table-4: Cross-tabulation of parity with complications of grand multi-parity

Condition incidence	Parities		Total	*p*
	Upto 7	<7		
Pregnancy Induced Hypertension				
Present	4	7	11	0.06
Absent	103	56	159	
Placenta Previa				
Present	5	5	10	0.38
Absent	102	58	160	
Pre-mature rupture of Membranes				
Present	4	3	7	0.75
Absent	104	59	163	
Abruptio Placentae				
Present	4	1	5	0.42
Absent	99	66	165	

$p \leq 0.05$

DISCUSSION

This study aimed to determine the frequency of common maternal complications associated with GMP. The current study showed no significant association between the age of patients and the complications. Similar results were observed when complications were stratified according to the age and parity of study participants.

GMP has been linked to several maternal conditions. Our study found PIH, PROM, Placenta previa, and abruptio placentae as significant complications. Mgaya and colleagues discovered in 2013 that GMP patients had double the likelihood of malpresentation and three times the risk of meconium-stained fluid and placenta previa in comparison to lower-parity women, even after adjusting for age.[11] According to another study by Alsammani *et al*, large multiparty births remain a prominent obstetrics issue. It is associated with a variety of medical and obstetric concerns.[12]

A prospective comparative study from Bangladesh reported that among GMP patients, 95% were suffering from anaemia of different severity. The incidence of hypertension and gestational diabetes in grand multiparas was significantly higher than in non-grand multiparas (45% vs. 12%) and (12% vs. 2%), respectively. The other complications like placenta praevia, abruptio placentae, multiple pregnancies, malpresentation, PPH, and ruptured uterus were significantly higher among GMP.[11]

A descriptive cross-sectional study from Hyderabad, Pakistan, reported that GMP was associated with a number of complications for the mother, and the authors concluded that the effect of these complications could easily be minimised by better antenatal care.[12] The study enrolled 159 pregnant patients having maternal complications of anaemia at 23.27% and hypertension at 5.03%.[13] GMP women were older, married earlier, received less prenatal care, and had a higher history of stillbirth, twin, and preeclampsia than primipara women, according to a retrospective case-control study conducted in Turkey to ascertain the impact of GMP on maternal, obstetric, neonatal, and foetal outcomes.[14] Compared to primipara women, preeclampsia, PPH, and foetal distress were more prevalent in this pregnancy. Compared to primiparas, grand multipara infants required much more newborn critical care and had lower birth weights.[13,15,16]

Stressing the value of family planning and giving proper prenatal care is crucial in societies where large families are favoured. In an analysis of 430 GMP women, the researchers discovered a strong correlation between GMP and unfavourable pregnancy outcomes such as diabetes mellitus, PIH, and caesarean delivery. Placental abruption, placenta previa, preterm labour, PPH, and the frequency of hospitalisation to the newborn critical care unit were not significantly correlated with each other.[12]

This was a hospital-based study with a small sample size that did not represent the entire general population. Also, the neonatal complication of GMP, the socio-economic status, and the desire for a large family size by either parent were not studied. A comparative cross-sectional study looking into the entire complication profile and finding an association with sociodemographic variables is recommended.

CONCLUSION

Grand multi-parity is associated with a number of obstetrical complications, with pregnancy-induced hypertension at the top. The antenatal care of these patients should be designed in a way to reduce the occurrence of these complications.

REFERENCES

1. Alkwai H, Khan F, Alshammari R, Batool A, Sogeir E, Alenazi F, Alshammari K, *et al*. The Association between Grand Multi-parity and Adverse Neonatal Outcomes: A Retrospective Cohort Study from Ha'il, Saudi Arabia. Children (Basel). 2023;10(9):1541. DOI: https://doi.org/10.3390/children10091541
2. Solomons B. The dangerous multipara. Lancet 1934;224(5784):8–11. DOI: https://doi.org/10.1016/S0140-6736(00)90086-2
3. Dasa TT, Okunlola MA, Dessie Y. Effect of grand multi-parity on the adverse birth outcome: A hospital-based prospective cohort study in Sidama Region, Ethiopia. Int J Womens Health 2022;14:363–72. DOI: https://doi.org/10.2147/IJWH.S350991
4. World Health Organization. Maternal mortality [Internet]. Geneva: World Health Organization; 2023 [cited 2025 May 19]. Available from: https://www.who.int/news-room/fact-sheets/detail/maternal-mortality
5. Maraj H, Kumari S. No clarity on the definition of parity: A survey accessing interpretation of the word parity amongst obstetricians and midwives and a literature review. Eur J Obstet Gynecol Reprod Biol 2021;263:15–19. DOI: https://doi.org/10.1016/j.ejogrb.2021.05.042
6. Lopian M, Kashani-Ligumski L, Cohen R, Herzlich J, Vinnikov Y, Perlman S. Grand multi-parity, is it a help or a hindrance in a trial of labor after cesarean section (TOLAC)? J Matern Foetal Neonat Med 2023;36(1):2190835. DOI: https://doi.org/10.1080/14767058.2023.2190835
7. Hochler H, Wainstock T, Lipschuetz M, Sheiner E, Ezra Y, Yagel S, *et al.* Grandmultiparity, maternal age, and the risk for uterine rupture – a multicenter cohort study. Acta Obstet Gynecol Scand 2020;99(2):267–273. DOI: https://doi.org/10.1111/aogs.13725
8. Akhtar R, Afridi S, Karim R, Malik NN. Frequency of maternal and foetal outcome in grand multipara women: Khyber J Med Sci 2018;11(3):376–79.
9. Afzal A, Mahajan N, Firdous N. Pregnancy outcomes in grand multiparous patients: a hospital-based study from Jammu and Kashmir, India. Int J Reprod Contracept Obstet Gynecol 2016;5(3):788–92. DOI: https://doi.org/10.18203/2320-1770.ijrcog20160585
10. Nordin NM, Fen CK, Isa S, Symonds EM. Is grandmultiparity a significant risk factor in this new millennium? Malays J Med Sci 2006;13(2):52–60.
11. Mgaya AH, Massawe SN, Kidanto HL, Mgaya HN. Grand multi-parity: is it still a risk in pregnancy? BMC Pregnancy Childbirth 2013;13:241. DOI: https://doi.org/10.1186/1471-2393-13-241
12. Alsammani MA, Ahmed SR. Grand Multi-parity: Risk Factors and Outcome in a Tertiary Hospital: a Comparative Study. Materia Sociomed 2015;*27*(4): 244–7. DOI: https://doi.org/10.5455/msm.2015.27.244-247
13. Sham N, Das PC, Maheshwari, Memon SA. Maternal complications in grand multipara. Med Channel. 2016;22(1):38–42.
14. Başkiran Y, Uçkan K, Çeleğen I. Effect of grand multi-parity on maternal, obstetric, foetal and neonatal results. Eur Rev Med Pharmacol Sci 2023;*27*(22):10979–84. https://doi.org/10.26355/eurrev_202311_34466
15. Shahida SM, Islam MA, Begum S, Hossain MA, Azam MS. Maternal outcome of grand multipara. Mymensingh Med J 2011;20(3):381–5.
16. Bezircioglu I. The effect of grand multi-parity on maternal, obstetric, foetal and neonatal outcomes. Perinat J 2013;21(1):17–22. DOI: https://doi.org/10.26355/eurrev_202311_34466

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Original Article

PATTERN OF INJURIES AND RISK FACTORS AMONG MOTORCYCLISTS IN ROAD TRAFFIC ACCIDENTS: A HOSPITAL-BASED STUDY IN SWABI, PAKISTAN

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Background: Worldwide, motorcycle-related road traffic accidents (RTA) are a major contributing cause of death, reporting 380,000 annual deaths, with developing countries bearing 93% of this. In our setup, knowing the serious injury problem and where exactly prevention and measures are most urgently needed is pertinent. This study determines the pattern of different types of injuries, associated risk factors, and demographic characteristics among motorcyclists involved in RTA presented to the District Headquarter's Hospital Swabi, KPK. **Methods:** It is a cross-sectional study conducted from 1st April to 1st October 2023 after IRB approval in District Headquarter's Hospital Swabi KP. A total of 182 samples was calculated, and non-probability consecutive sampling was used to draw the samples. Data was collected on a self-devised structured questionnaire and analysed using SPSS version 22. Chi-square was applied to assess the association between different variables. $p \leq 0.05$ was considered significant. **Results:** A total of 182 patients with a mean age of 27.52±11.369 years, males 169(92.9%), were included. In total, 92(50.6%) did not possess basic knowledge of traffic rules, and 135(74.2%) did not wear safety helmets. The most common cause of accidents was collision with other vehicles, 74(40.7%), and injuries to lower limbs, 69(37.9%). **Conclusion:** Motorcycle-related road traffic accidents are still common in the current area, primarily due to a lack of awareness of safety measures. It predominantly affects young males with lower limb and head injuries, mainly due to vehicle collisions.

Keywords: motorcyclists; injury pattern; road traffic accidents

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INTRODUCTION

Motorcycle-related road traffic accidents (RTAs) are a critical public concern globally, contributing to significant morbidity, mortality, and socioeconomic burdens, particularly in low-and middle-income countries (LMICs).[1] According to the World Health Organisation (WHO), approximately 1.19 million lives are lost annually to road traffic injuries, with motorcyclists accounting for 28% of these fatalities.[2] Motorcyclists are among the most vulnerable road users, facing a 34-fold higher risk of mortality per mile travelled compared to car occupants.[3] Globally, motorcycle accidents account for over 380,000 annual deaths, with LMICs bearing 93% of this burden due to factors such as inadequate road safety infrastructure and enforcement of traffic regulations.[4]

In LMICs, motorcycle use has surged due to affordability and accessibility, particularly for economic activities and transportation in rural and urban areas. However, this rise has been paralleled by escalating trauma rates, with young males aged 20-40 years constituting the majority of victims, reflecting their dominance in motorcycle-related occupations and risk-taking behaviours. [4] Epidemiological studies highlight seasonal trends, with higher accident rates in summer months and geographic disparities, as rural roads often lack safety infrastructure, contributing to elevated mortality odds ratios.[5] For instance, in Iran, summer motorcycle accidents accounted for 37.5% of hospital admissions, with the rural road mortality odds ratio reaching 3.52%.[3] Similarly, autopsy-based studies in Malaysia revealed that 31% of fatally injured riders tested positive for alcohol or illicit drugs, underscoring behavioural risk factors. [6]

Injury patterns among motorcyclists are dominated by fractures and traumatic brain injuries, with lower limb fractures 44.6% and intracranial haemorrhages 74% frequently reported.[4] The absence of helmets- a preventable risk factor-exacerbates head injury severity, as evidenced by studies in Malawi,

where 52% of victims lacked helmets.[7] Despite these insights, region-specific data remain sparse in many LMICs, including Pakistan, where motorcycle use is widespread, but injury surveillance systems are underdeveloped.

This study examines the pattern of injuries and risk factors among motorcyclists presented to the District Headquarter's Hospital Swabi, KP Pakistan. We investigate local demographic, behavioural and infrastructural determinants based on findings from similar contexts, such as Iran's seasonal mortality trends, Malaysia's substance use associations, and Malawi's orthopaedic injury burden.

MATERIAL AND METHODS

It is a cross-sectional study conducted from 1st April 2023 to 1st October 2023 after IRB approval in District Headquarter's Hospital Swabi, KP, Pakistan. Using WHO software for sample size estimation with a confidence interval of 95%, an absolute precision of 0.07 and an anticipated population proportion of 63.5%, a total sample size of 182 was calculated, and non-probability consecutive sampling was used to draw the sample.[8] The sample included all those patients who had met with motorcycle accidents and presented to either the emergency department or the OPD, or were admitted to the wards. All patients who were unconscious at the time of data collection or denied consent to the study were excluded from our study. Data was collected on a self-devised structured questionnaire and analysed using SPSS version 22. Descriptive analysis of continuous variables (age) was done in the form of mean ± standard deviation. For categorical variables (gender, residence, and socioeconomic status), frequencies and percentages were calculated. Chi-square was applied to assess the association between different variables. $p \leq 0.05$ was considered significant.

RESULTS

A total of 182 patients with a mean age of 27.52±11.369 years, among whom males were 169 (92.9%) and females were 13(7.1%), were included in the study Table-1. Half of the participants did not possess basic knowledge of traffic rules, and 135(74.2%) did not wear safety helmets Table-2. The most common causes of accidents were collisions with other vehicles, i.e., 74(40.7%), and injuries to lower limbs, 69(37.1%). Table-3.

Association of patterns of injuries with various conditions of patients resulted in non-significant statistics; $p<0.05$. However, fractures were most common among those who did not wear helmets 67(49.7%) and were brought to the hospital with a conscious mind 67(51.9%). Similarly, fractures were caused mainly through vehicle-to-vehicle collisions, mostly involving lower limbs 40(58.0%) Table-4.

Table-1: Frequencies of socio-demographic parameters

Parameters		Frequency	Percentage
Gender	Male	169	92.9
	Female	13	7.1
Residence	Rural	95	52.2
	Urban	87	47.8
Education	Illiterate	29	15.9
	Below matric	66	36.3
	Below bachelors	72	39.6
	Above bachelors	15	8.2
Occupation	Student	45	24.7
	Labourer	19	10.4
	Teacher	15	8.2
	Others	103	56.6

Table-2: Basic description of participants about the accident

Ordinal variables		Frequencies	Percentage
Driving license	Yes	75	41.2
	No	106	58.8
Knowledge about traffic Rules	Yes	90	49.4%
	No	92	50.6%
Wearing helmet	Yes	47	25.8%
	No	135	74.2%
Time of accident	8 am to 8 pm	143	78.6%
	8 pm to 8 am	39	21.4%
Status at time of hospital arrival	Conscious	129	70.9
	Unconscious	53	29.1
Drug usage	Prescribed	10	5.5
	Addiction	16	8.8
	No usage	156	85.7
Eyesight	Normal	137	75.3
	With glasses	37	20.6
	Reduced visual acuity without glasses	8	4.4
Total		182	100

Table-3: Descriptives of different characteristics of injury and causes of incident

Ordinal variables		Frequencies	Percentage
Cause of accident	Bad roads	43	23.6
	Other vehicles	74	40.7
	Mechanical failure	19	10.4
	Over speeding	46	25.3
Site of injury	Head	61	33.9
	Trunk	14	7.7
	Upper limbs	30	16.5
	Lower limbs	69	37.9
	Others	8	4.4
Type of injury	Fracture	92	50.6
	Blunt injury	44	24.2
	Perforating injury	14	7.7
	Lacerations	32	17.6
Total		182	100

Table-4: Association of patterns of injury with different conditions of patients

Different conditions of patients		Type Of Injury [n (%)]				Total	*p*
		Fracture	Blunt Injury	Perforating Injury	Lacerations		
Was the patient wearing a helmet	**Yes**	25 (53.2)	11 (23.4)	1 (2.1)	10 (21.3)	47 (25.8)	0.370
	No	67 (49.6)	33 (24.4)	13 (9.6)	22 (16.3)	135 (74.2)	
Condition in which brought to hospital	**Conscious**	67 (51.9)	30 (23.2)	9 (7.0)	23 (18.8)	129 (70.9)	0.889
	Unconscious	25 (47.2)	14 (26.4)	5 (9.4)	9 (17.0)	53 (29.1)	
History of drug usage	**Prescribed drugs**	4 (40.0)	3 (30.0)	1 (10)	2 (20.0)	10 (5.5)	0.646
	Drug abused	11 (68.8)	2 (12.5)	2 (12.5)	1 (6.3)	16 (8.8)	
	None	77 (49.7)	39 (25.2)	11 (7.1)	28 (18.1)	155 (85.2)	
Cause of accident of patient	**Bad road condition**	24 (55.8)	11 (25.6)	2 (4.7)	6 (14/0)	43 (23.6)	0.874
	Another vehicle	38 (51.4)	14 (18.9)	8 (10.8)	14 (18.9)	74 (40.7)	
	Mechanical failure	8 (42.1)	6 (31.6)	1 (5.3)	4 (21.1)	19 (10.4)	
	Over speeding	22 (48.9)	13 (28.9)	3 (6.7)	7 (15.6)	45 (24.7)	
Site of body injured	**Head**	26 (42.6)	16 (26.2)	6 (9.8)	13 (21.3)	61 (33.5)	0.894
	Trunk	8 (57.1)	3 (21.4)	0 (0)	3 (21.4)	14 (7.7)	
	Upper limbs	15 (50.0)	6 (20)	3 (10.0)	6 (20)	30 (16.5)	
	Lower limbs	40 (58.0)	17 (24.6)	4 (5..0)	8 (11.6)	69 (37.9)	
	Others	2 (28.6)	2 (28.6)	1 (14.3)	2 (28.6)	7 (3.8)	
Total						182 (100)	

DISCUSSION

The finding of this hospital-based study in Swabi, Pakistan, underscores critical epidemiological patterns and modifiable risk factors associated with motorcycle-related RTAs, contributing to the global discourse on road traffic injury prevention in LMICs. The predominance of young males (92.9%) in our cohort aligns with global trends, where motorcycle use is disproportionately concentrated among males aged 20-40 years, engaged in high-risk occupations or informal transportation roles.[9] This demographic's vulnerability is exacerbated by systemic factors such as inadequate traffic law enforcement, poor road infrastructure, and low compliance with safety measures, which collectively amplify injury severity and mortality in LMICs.[10,11]

Only 25.8% of victims wore helmets, consistent with studies from Malawi (52% non-compliance) and Iran (74% non-compliance).[3,7] This aligns with WHO estimates that helmet use reduces head injury risk by 69%. However, structural barriers, such as affordability, cultural resistance, and inconsistent enforcement, persist in LMICs. Despite the lack of statistical significance between helmet use and injury patterns in our study (p=0.370), autopsy-based analysis emphasises that helmet non-use correlates strongly with fatal head injuries, particularly in high-speed collisions.[12] The predominance of lower limb injuries (37.9%) and features (50.6%) mirrors the finding from Malawi, where lower limb fractures constituted 44.6% of motorcycle trauma cases, likely due to motorcycle design and poor road conditions.[7] These injuries highlight the need for integrated protective strategies, such as reinforced footwear and road infrastructure upgrades, to address region-specific injury mechanisms [13]

Most accidents occurred during daylight hours (78.6%), contrasting with studies from Iran and India that identified seasonal peaks (e.g., summer months or monsoon seasons) linked to increased traffic density or hazardous weather.[14] This discrepancy may reflect Swabi's unique climatic stability or underreporting of nighttime accidents due to limited traffic usage. Notably, 58.3% of riders lacked a valid license, and 50% did not know traffic rules, underscoring systemic gaps in driver education and licensure protocols, a critical area for policy intervention. Substance use (8.8% addiction, 5.5% prescribed drugs) was lower than in Malaysian autopsy studies (31% positive for substances), suggesting cultural or methodological differences in reporting high-risk behaviour.[6]

The high incidence of vehicle-to-vehicle collisions (40.7%) and speeding (24.7%) underscores the roles of mixed-road and lax enforcement in LMICs. Longitudinal studies on training load and fatigue markers in athletes suggest that accumulated stress and inadequate recovery increase injury risk, a framework applicable to motorcyclists facing repetitive exposure to hazardous roads.[15] For instance, rapid increases in acute training load correlate with immunosuppression and injury susceptibility, paralleling the risks faced by motorcyclists in high-traffic environments.

This study advocates multisectoral interventions, including stringent enforcement of helmet laws, infrastructure updates targeting rural road hazards, and community education programs to address low traffic rule literacy.[10] Limitations include survivor bias (excluding pre-hospital fatalities) and the cross-sectional design, which precludes causal inferences. Future research should employ longitudinal designs to track injury outcomes and integrate biomechanical analysis of lower limb injuries alongside qualitative assessments of

behavioural risk factors such as substance use and fatigue.

CONCLUSION

This hospital-based study in Swabi highlights a critical burden of motorcycle-related injuries, characterised by high rates of lower limb fractures, helmet non-compliance and vehicle-to-vehicle collisions, underscoring systemic gaps in road safety enforcement and infrastructure. To mitigate this preventable morbidity, policymakers must prioritise context-specific strategies, including mandatory helmet laws and rural road rehabilitation, to align with global road safety targets.

REFERENCE

1. Oltaye Z, Geja E, Tadele A. Prevalence of Motorcycle Accidents and Its Associated Factors Among Road Traffic Accident Patients in Hawassa University Comprehensive Specialized Hospital, 2019. Open Access Emerg Med 2021;13:213–20. DOI: https://doi.org/10.2147/OAEM.S291510
2. World Health Organization. Road traffic injuries. 2023. Retrieved from https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries. Acceded on: 12th April, 2025.
3. Hosseinpour M, Mohammadian-Hafshejani A, Esmaeilpour Aghdam M, Mohammadian M, Maleki F. Trend and Seasonal Patterns of Injuries and Mortality Due to Motorcyclists Traffic Accidents; A Hospital-Based Study. Bull Emerg Trauma 2017;5(1):47–52.
4. Mwaungulu M, Noah P, Philipo GS, Mpanga CC. Patterns of orthopedic injuries among motorcycle trauma patients in Malawi. East Cent Afr J Surg 2024;29(4):24–35. DOI: https://doi.org/10.4314/ecajs.v29i4.4
5. Shafay M, Anwar HN, Bibi I, Samad A, Akter N, Rasheed A, et al. Seasonal and time-series analysis of road traffic accidents. Pak J Health Sci 2024;5(5):121–5. DOI: https://doi.org/10.54393/pjhs.v5i05.1547
6. Mohd Saman SA, Jothee S, Nor FM, Shafie MS. The Pattern of injuries among motorcyclists in fatal road traffic accidents: An autopsy-based study. Am J Forensic Med Pathol 2021;42(2):141–6. DOI: https://doi.org/10.1097/PAF.0000000000000639
7. Chokotho L, Croke K, Mohammed M. Mulwafu W, Bertfelt J, Karpe S, et al. Epidemiology of adult trauma injuries in Malawi: results from a multisite trauma registry. Inj Epidemiol 2022;9(1):14. DOI: https://doi.org/10.1186/s40621-022-00379-5
8. Ganem G, Fernandes RCP. Motorcycle accidents: characteristics of victims admitted to public hospitals and circumstances. Rev Bras Med Trab. 2020;18(1):51–8. DOI: https://doi.org/10.5327/Z1679443520200447
9. Nakahara S, Chadbunchachai W, Ichikawa M, Tipsuntornsak N, Wakai S. Temporal distribution of motorcyclist injuries and risk of fatalities in relation to age, helmet use, and riding while intoxicated in Khon Kaen, Thailand. Accid Anal Prev 2005;37(5):833–42. DOI: https://doi.org/10.1016/j.aap.2005.04.001
10. Mukherjee D, Mitra S. Study of factors contributing to vulnerable road users hit-and run crashes in urban setup in a developing country. Transp Res Proc 2025.82:2582–604. DOI: https://doi.org/10.1016/j.trpro.2024.12.206
11. Irfan H. Road safety in Pakistan: vulnerable road users, challenges and policy implications. Pak J Humant Soc Sci 2024;12(4):3415–26. DOI: https://doi.org/10.52131/pjhss.2024.v12i4.2655
12. Liu BC, Ivers R, Norton R, Boufous S, Blows S, Lo SK. Helmets for preventing injury in motorcycle riders. Cochrane Database Syst Rev 2008;23(1):CD004333. DOI: https://doi.org/10.1002/14651858.CD004333.pub3
13. Pereira-Barriga MC, Borrero-Hernández JM, García-Iglesias JJ, López-López D, Ruiz-Frutos C, Allande-Cussó R, *et al*. A review of the injuries caused by occupational footwear. Occup Med (Lond) 2024;74(3):218–24. DOI: https://doi.org/10.1093/occmed/kqae003
14. Garg T, Toshniwal D, Parida M. Weather-driven risk assessment model for two-wheeler road crashes in Uttar Pradesh, India. Sci Rep 2025;15(1):6859. DOI: https://doi.org/10.1038/s41598-025-91369-2
15. Jones CM, Griffiths PC, Mellalieu SD. Training load and fatigue marker associations with injury and illness: A systematic review of longitudinal studies. Sports Med 2017;47(5):943–74. DOI: https://doi.org/10.1007/s40279-016-0619-5

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Original Article

SUCCESSFUL INDUCTION OF LABOUR WITH DINOPROSTONE IN BEYOND 36 WEEKS OF PREGNANCIES: AN OBSERVATIONAL STUDY

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Background: Induction of labour (IOL) is a common practice that accounts for 20 % of all births. Different methods for IOL are practised today, including vaginal tablets of Dinoprostone, which is not yet studied in the current context. This study aims to assess the success rate of IOL with Dinoprostone in women with beyond 36 weeks of pregnancy. **Methods:** This descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad, from 1st May 2023 to 31st October 2023. A total of 207 women with singleton pregnancy, gestational age ≥ 36 weeks, were included in the study. Tablet Dinoprostone 3 mg was inserted in the posterior fornix vagina. Following application, the patient remained in a supine position for at least 15–30 minutes to prevent expulsion of the tablet. Cesarean delivery was performed in case of nonprogress of labour. Data was analysed with SPSS, with a *p-value* of the Chi-square test <0.05, which was considered statistically significant. **Results:** A total of 207 patients with a mean age of 29.087±2.69 years and gestational age of 39.531±1.19 weeks participated in the study. The success rate was seen in 178 patients (86%) after labour induction in women beyond 36 weeks of pregnancy. **Conclusion:** The effect of Dinoprostone on the IOL is promising. The optimal timing of offering IOL to women with beyond 36 weeks of pregnancy warrants further investigation, as does further exploration of the risk profiles of women and their values and preferences.

Keywords: Dinoprostone; beyond 36 weeks of pregnancy; induction; success rate; weight

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INTRODUCTION

Induction of Labour (IOL) is a commonly practised obstetrical intervention. About 20% of all births are caused by the prevalent practice of inducing labour, which is the intentional start of labour before its spontaneous commencement.[1] On the other hand, the misuse of Caesarean deliveries is a major worry nowadays.[2] IOL for some causes, especially in pregnancies beyond 36 weeks, seems even more crucial because it can reduce the risk of Caesarean section.[3]

Today, a variety of techniques are employed to encourage the IOL, such as pharmacological medications (prostaglandins such as Dinoprostone PGE2, misoprostol PGE1, mifepristone, or oxytocin) and mechanical techniques (membrane stripping or sweeping, cervical balloon, amniotomy).[4] In patients with a favourable cervix, oxytocin is traditionally used to induce labour. However, Prostaglandin is effective in inducing labour and cervical softening when there is an unfavourable cervix (low Bishop score).[5] Numerous prospective trials have tested prostaglandin analogues at various doses and methods of administration alone or in combination with oxytocin, a placebo, or one another. [6,7]

The safest method for inducing labour in an unscarred uterus with an unfavourable cervix is to utilise a Dinoprostone vaginal tablet. By raising levels of collagenase, elastase, glycosaminoglycan, ciermatan phosphate, and hyaluronic acid, prostaglandins change the extracellular ground material of the cervix.[8] Uterine contractions begin when the cervix's smooth muscle relaxes and gap junctions develop.[8] In accordance with the suggested procedure, a maximum of two dosages spaced six hours apart are administered, with 3 mg of each dose maintained in the vaginal posterior fornix. The effectiveness of Prostaglandin Dinoprostone in successfully inducing labour in women presenting with beyond 36 weeks of pregnancies was 84%, according to Madhavi KN et al.[9]

Although the results of the aforementioned study are excellent, there is still a practical gap with the use of prostaglandin Dinoprostone to induce labour in the Pakistani pregnant cohort. Thus, this study aims to assess the success rate of prostaglandin Dinoprostone in inducing labour in women presenting with more than 36 weeks of pregnancy. Furthermore, despite finding the

success rate, the results help us safely lower the rate of primary cesarean births.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad, from 1st May to 31st October 2023. A total sample size of 207 was calculated using WHO software with a confidence level of 95%, the anticipated proportion of efficacy of Dinoprostone = 84%[10] and absolute precision = 5%. Patents were chosen on non-probability consecutive sampling. Women aged 18–35 years old with singleton pregnancy confirmed on ultrasound, gestational age >36 weeks on LMP, and any parity were included in the study. However, those who had a history of more than one cesarean section, placenta previa or IUGR (assessed on USG) and refused informed consent were excluded.

The institutional review board approved the study protocol. After screening and informed consent, patients were included in the study. Tablet Dinoprostone 3 mg was inserted in the posterior fornix of the vagina. Following application, the patient remained in a supine position for at least 15–30 minutes to prevent expulsion of the tablet and waited for deliveries for 24 hours. All the administrations were given by the consultant gynaecologist, who had 3 years of post-fellowship experience. Data was recorded on a prescribed pre-formed proforma by the principal author.

Cesarean delivery was performed in case of foetal distress, nonprogress of labour, and failure of induction with/without chorioamnionitis (Intrapartum temperature >100.4°F or >37.8°C (by thermometer), tachycardia (>120 beats/min), Foetal tachycardia (>160–180 beats/min), purulent or foul-smelling vaginal discharge and maternal leukocytosis (total blood leukocyte count >15,000–18,000 cells/μL) on laboratory test.

Data was analysed using the statistical analysis program (IBM-SPSS version 22). Mean±SD was presented for quantitative variables like age, gestational age, parity, and number of doses. Frequency and percentage were computed for qualitative variables like mode of delivery and success rate. Stratification was done with regard to age, gestational age, parity, and number of doses, with a success rate of IOL by using the chi-square test, with $p \leq 0.05$ considered statistically significant.

RESULTS

The mean age of the total 207 female patients was 29.087±2.69 years, and the mean gestational age was 39.531±1.19 weeks, Table-1. The majority of the patients undergo vaginal delivery 178(86%), as shown in Table-2. Stratification of success rate with respect to age, gestational age, parity, and number of doses are shown in Table-3.

Table-1: Demographic details of patients

Demographics	Mean±SD
Age in years	29.087±2.69
Gestational age in weeks	39.531±1.19
Parity	1.589±1.43
Number of doses	1.082±0.27

Table-2: Mode of deliveries and success rate of Prostaglandin Dinoprostone (n=207)

Variable	Frequency	Percentage
Mode of delivery		
Vaginal	178	86%
C-section	29	14%
Success rate		
Yes	178	86%
No	29	14%
Total	207	100%

Table-3: Stratification of success rate versus demographic variables (n=207)

Variable	Success rate		*p*
	Yes (n=178	No (n=29)	
Age group			
18–27	24 (13.5%)	3 (10.3%)	0.642
28–35	154 (86.5%)	26 (89.7%)	
Parity			
0–3	161 (90.4%)	25 (86.2%)	0.483
>3	17 (9.6%)	4 (13.8%)	
Number of doses			
1	165 (92.7%)	25 (86.2%)	0.238
>1	13 (7.3%)	4 (13.8%)	

P<0.05

DISCUSSION

The success rate of IOL, particularly in early or full-term pregnancies, determines the fate of natural or cesarean delivery. This study found a striking success rate, i.e., of 86% in 178 post-term patients. This is very important as the fear of cesarean is effectively reduced, promoting the good well-being of mothers.

The overall success rate of IOL with Dinoprostone aligns with previous studies, which report vaginal delivery rates following Dinoprostone induction ranging from 55.6% to 86%.[10] This variability in success rates across different populations may be influenced by factors such as maternal characteristics, cervical status, and healthcare facility access. The 14(29%) Cesarean section rate in our study was primarily due to failed induction, particularly foetal distress, 'mothers' fears, and other unfavourable conditions.

Different authors have found a variable success rate of IOL with different methods. In our study, we used Prostaglandin Dinoprostone. Close to our study, Madhavi KN *et al,* showed that Prostaglandin Dinoprostone's success rate was 84% for successful IOL in women.[9] Another local study by Khan QM *et al,* showed that the success of Prostaglandin Dinoprostone gel was 65.5% for successful IOL.[11] Thomas J *et al,*

found that vaginal Dinoprostone reduces the Cesarean section rate to about 10% ensuring its effectiveness in IOL.[12]

The successfulness of IOL with vaginal Dinoprostone varies with age group and parity. In our study, 154(86.5%) success was observed in 28–35 age groups and 161 (90.4%) with the first three parities. In accordance with this, Khan QM *et al,* in Pakistan, found a total of 35 cases with the success of IOL among patients aged less than 35 years, 28 cases with a nulliparous uterus, and 30 cases with first parity.[11] Taner GÜNA *et al,* from Turkey, in contrast, found that multiparity increases the success of Dinoprostone in IOL, whereas age does not affect the outcome.[13]

The optimal management of women beyond 36 weeks of pregnancy is controversial.[14] It was found in 9 non-randomised controlled trials that, overall, expectant management of pregnancy was associated with approximately 22% higher odds of cesarean delivery than elective IOL. Most of these studies were conducted in women at or beyond 39 weeks of gestation. In studies of women at or beyond 39 weeks of gestation, the evidence was rated as moderate because of the size of the studies and the consistency of the findings. Among women less than 39 weeks of gestation, three trials reported no difference in risk of cesarean delivery among women who were induced as compared to expectant management, but all of these trials were small, older, and of poor quality.[15] Other randomised controlled trials suggest that elective IOL at or above 39 weeks of gestation and beyond is associated with a decreased risk for cesarean delivery and meconium-stained amniotic fluid.[16]

Dr. Edward Bishop created a pelvic scoring system in the 1960s and determined that elective induction was effective in multiparous women with uncomplicated pregnancies at term based on clinical experience, with a score of >8.[17.] Numerous trials have been conducted to provide low-dose prostaglandin pessaries to patients for outpatient usage in an effort to increase the Bishop score.[18,19] These medications raise the likelihood of a normal delivery by considerably raising the Bishop score. Ripening agents for outpatient use were not used in this trial; nonetheless, the group with a gestational age of greater than 39 weeks had a higher Bishop score in relation to the delivery method. This serves as an indirect indication of improved delivery results.

CONCLUSION

The success rate of IOL with Dinoprostone in early or full term is quite high in our setup, particularly in multiparous pregnancies with later-age mothers. However, it is imperative to find a comparative study with beyond 36 weeks versus post-term pregnancies with indicators like the number of vaginal doses and duration from administering the dose till delivery.

REFERENCES

1. Gill P, Lende MN, Van Hook JW. Induction of Labor. [Updated 2023 20th February]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459264/
2. Angolile CM, Max BL, Mushemba J, Mashauri HL. Global increased cesarean section rates and public health implications: A call to action. Health Sci Rep 2023;6(5):e1274. DOI: https://doi.org/10.1002/hsr2.1274
3. Ethiraj G, Ramachandra AC, Rajan S. Induction of Labor and Risk for Emergency Cesarean Section in Women at Term Pregnancy. J Clin Gynecol Obstet 2019;8(1):17–20.
4. Sanchez-Ramos L, Levine LD, Sciscione AC, Mozurkewich EL, Ramsey PS, Adair CD, et al. Methods for the induction of labor: efficacy and safety. Am J Obstet Gynecol 2024;230(3):S669–95. DOI: https://doi.org/10.1016/j.ajog.2023.02.009
5. Bouchghoul H, Zeino S, Houllier M, Senat MV. Cervical ripening by prostaglandin E2 in patients with a previous cesarean section. J Gynecol Obstet Hum Reprod 2020;49(4):101699. DOI: https://doi.org/10.1016/j.jogoh.2020.101699
6. Socha MW, Flis W, Pietrus M, Wartęga M. Results of induction of labor with prostaglandins E1 and Dinoprostone (The RIPE Study): A real-world data analysis of obstetrical effectiveness and clinical outcomes of pharmacological induction of labor with vaginal inserts. Pharmaceuticals (Basel) 2023;16(7):982. DOI: https://doi.org/10.3390/ph16070982
7. Torloni MR, Siaulys M, Riera R, Martimbianco ALC, Pacheco RL, Latorraca COC, *et al*. Route of oxytocin administration for preventing blood loss at caesarean section: a systematic review with meta-analysis. BMJ Open 2021;11(9):e051793. DOI: https://doi.org/10.1136/bmjopen-2021-051793
8. Golichowski AM. Biochemical basis of cervical maturation. In: Gabor Huszar (Ed). Physiology & biochemistry of uterus in pregnancy & labor. 1st ed. Boca Raton: CRC Press; 1986.p. 261. https://doi.org/10.1201/9780429282669
9. Madhavi KN, Polaiah KP, Sivaiah T. A comparative study of the safety and efficacy of intra vaginal misoprostol tablet versus intra cervical Dinoprostone gel for cervical ripening and induction of labour. J Evol Med Dent Sci 2015;4(11):1769–75. DOI: https://doi.org/10.14260/jemds/2015/253
10. Raza F, Majeed S. Intracervical Dinoprostone gel for cervical ripening and induction of labour. Pak J Med Sci 2008;24(2):241–45.
11. Khan QM, Mastoor K, Javaid A, Raza T, Ilyas S, Anjum S. The comparison of the success rates of the Prostaglandin Dinoprostone (Dinoprostone) versus foley catheter in females with postdate pregnancy. J Rawalpindi Med Coll 2025;28(4).634–8. https://doi.org/10.37939/jrmc.v28i4.2605
12. Thomas J, Fairclough A, Kavanagh J, Kelly AJ. Vaginal Prostaglandin (PGE2 and PGF2a) for induction of labour at term. Cochrane Database Syst Rev 2014;2014(6):CD003101. DOI: https://doi.org/10.1002/14651858.CD003101.pub3
13. Gunay T, Hocaoglu M. Factors affecting the success of vaginal prostaglandin E2 used for labour induction in term pregnants. Namık Kemal Med J. 2019;7(3):245–52.
14. Wennerholm UB, Hagberg H, Brorsson B, Bergh C. Induction of labour versus expectant management for postdate pregnancy: Is there sufficient evidence for a change in clinical practice? Acta Obstet Gynecol Scand 2009;88:6–17. DOI: https://doi.org/10.1080/00016340802555948
15. Caughey AB, Sundaram V, Kaimal AJ, Cheng YW, Gienger A, Little SE, et al. Maternal and neonatal outcomes of elective induction of labor. Evid Rep Technol Assess (Full Rep) 2009;(176):1–257.
16. Caughey AB, Sundaram V, Kaimal AJ, Gienger A, Cheng YW, McDonald KM, et al. Systematic review: elective induction of labour versus expectant management of pregnancy. Ann Intern

Med 2009; 151:252-63, W53-63. https://doi.org/10.7326/0003-4819-151-4-200908180-00007
17. Tajik P, Bossuyt PM, Mol BW. Using a simplified bishop score to predict vaginal delivery. Obstet Gynecol. 2011;118(2 Pt 1):360. DOI: 10.1097/AOG.0b013e31822641f5. Erratum in: Obstet Gynecol. 2011;118(4):962.
18. O'Brien JM, Mercer BM, Cleary NT, Sibai BM. Efficacy of outpatient induction with low-dose intravaginal prostaglandin Dinoprostone: a randomised, double-blind, placebo controlled trial. Am J Obstet Gynecol 1995;173:1855–9. DOI: https://doi.org/10.1016/0002-9378(95)90440-9
19. Sawai SK, O'Brien WF, Mastrogiannis DS, Krammer J, Mastry MG, Porter GW. Patient-administered outpatient intravaginal prostaglandin Dinoprostone suppositories in postdate pregnancies: a doubleblind, randomised, placebo controlled study. Obstet Gynecol 1994;84:807–10.

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Original Article

INTRAUTERINE GROWTH RESTRICTION IN PREGNANCY-INDUCED HYPERTENSION: INCIDENCE AND ASSOCIATED FACTORS IN A TERTIARY CARE SETTING OF KHYBER PAKHTUNKHWA, PAKISTAN

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Background: Pregnancy-induced hypertension (PIH) is one of the leading risk factors, commencing greater foetal and maternal morbidity and mortality worldwide. Among other complications, intrauterine growth restriction (IUGR) is a significant outcome of PIH. In the Pakistani context, the incidence of IUGR in PIH women and comparison with human factors is rarely determined. This study aimed to find the frequencies of IUGR among PIH women presenting to a tertiary care setup and determine the possible effect of age, gestation age, parity, and weight on IUGR. M**ethods:** This cross-sectional study was conducted from 1st March to 30th August 2023 at the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad. The research comprised 159 pregnant women who had hypertension problems. The researcher underlined that all women underwent ultrasound biometry to determine IUGR per the Royal College of Obstetricians and Gynaecologists criteria. **Results:** Among the total 159 PIH women with a mean age of 27.691±2.63 years, the incidence of IUGR is 10.7%. IUGR was more prevalent in the 31–40 age group, i.e., 13%, having gestational age more than 30 weeks, i.e.16%, parity, i.e. 9.8%, and weight more than 70kg, i.e. 45.7%. **Conclusion:** The incidence of IUGR among women with PIH is low compared to neighbouring developing countries and requires individualised perinatal care, particularly among older aged, overweight, nulliparous, and beyond 30 weeks of gestation on a priority basis.

Keywords: pregnancy-induced hypertension; intrauterine growth restriction; gestational age; parity, weight

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INTRODUCTION

Pregnancy-induced hypertension (PIH) is a condition in which a pregnant woman beyond the 20th week of gestation has high blood pressure (≥140/90 mmHg)**.**[1] Along with eclampsia and pre-eclampsia, PIH is an alarming concern of public health worldwide that affects a significant population of pregnant women.[2] It bears a threatening risk to the foetus and mother, putting them at increased risk of other conditions like premature delivery, intrauterine growth restriction (IUGR), and placental abruption.[3] IUGR refers to the condition of achieving a low birth weight of a fetus by 10 percentile for gestational age.[4] It further devastated the pregnancy by 0.4%, increasing the overall morbidity and mortality rate and putting the neonates at high risk of poor neurodevelopmental and extrauterine growth restriction after pre-term birth.[5,6] The association of PIH and IUGR has diverse presentations. However, as a serious complication of pregnancy, IUGR increases the perinatal morbidity and mortality of mothers and foetuses.

The incidence of IUGR pregnancies complicated by PIH women varies. In the local context, Jabeen SS *et al,* reported 56.5% of PIH among 170 pregnant women, even more in nulliparous and IUGR in 64.7% of babies.[7] Globally, the prevalence of IUGR ranges from 7 to 15% and more in developing countries, i.e., 30%.[8,9] Zafar H *et al*, found 28%, and Fox NS *et al,* reported a 48.8% frequency of IUGR in pregnant women with PIH.[10,11] Some studies indicate a move strong link between IUGR and pre-eclampsia and haemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome.[12] Other studies highlight the demographic effect of PIH on IUGR. Jabeen SS *et al*, from Iran, correlated IUGR with gestational age, type of parity, and mode of delivery.[7]

This variability accentuates the need for further exploration to understand the possible significance of one condition affecting IUGR in PIH

pregnant women. Hence, this study aimed to find the frequencies of IUGR in the high-risk group, such as PIH presenting a tertiary care setting in Khyber Pakhtunkhwa, and determine the possible effect of age, gestation age, parity, and weight on IUGR. The study will not only help early preventive intervention in such high-risk groups but also will result in reducing maternal and neonatal morbidity and mortality.

MATERIAL AND METHODS

This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad, from 1st March to 30th August 2023. The sample size of 159 was calculated with the expected proportion (intrauterine growth restriction) of 28% and absolute precision (d) of 7%[8] using the WHO calculator. The study protocol was approved by the institution's ethical review board (Approval no: B-14, dated 02-01-2023). Data was collected after obtaining written consent through consecutive sampling techniques. Women aged 18–40 years, having singleton pregnancies on ultrasound with Parity 0–4, gestational age >20 weeks, and PIH as per consultant diagnosis were included in the study. Based on Royal College of Obstetricians and Gynaecologists guidelines, a senior Obstetrician and, sometimes, a radiologist confirmed IUGR in complicated cases. Moreover, noted by the researcher herself on the specially designed proforma, those patients with chronic hypertension on history, ruptured membranes on ultrasound, history of systemic diseases (renal, respiratory, congenital heart disease) on medical record, and congenital anomalies on ultrasound were excluded.

Data was analysed with SPSS version 22. Frequency and percentage were computed for qualitative variables like age groups, PIH, pre-eclampsia, and IUGR. Mean±SD was presented for quantitative variables like age, gestational age, parity, and weight. The Chi-square test was applied to find significant differences in IUGR and age, gestational age, parity, and weight. $p \leq 0.05$ was considered statistically significant.

RESULTS

A total of 159 PIH women with a mean age of 27.7±2.63 years, ranging from 18–40 years, were studied. The mean gestational age was 28.6±2.19 weeks, parity was 0.817±1.04, and weight was 63.993±7.44 Kg, as shown in Table-1.

The majority of the patients, i.e., 130(81.8%), were from the age group of 18–30 years, and 29(18.2%) patients were of 31–40 age group, as shown in Table-2. IUGR was seen in 17(10.7%) of patients, as shown in Figure-1. Stratification of IUGR with respect to age, gestational age, parity, and weight is shown in Table-3.

Table-1: Demographic variables of patients, n=159

Demographics	Mean±SD
Age (years)	27.691±2.63
Gestational age (weeks)	28.553±2.19
Parity	0.817±1.04
Weight (Kg)	63.993±7.44

Table-2: Frequency of patients according to age group, n=159

Age group (years)	No of Patients	Percentage
18–30	130	81.8
31–40	29	18.2

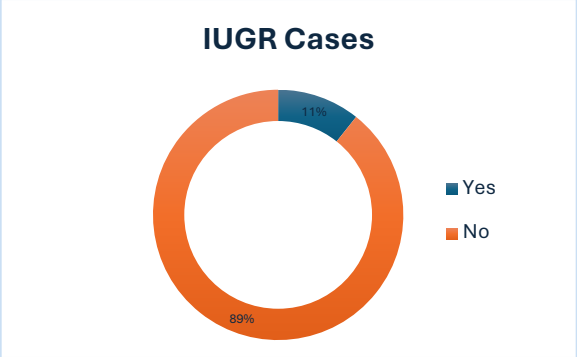

Figure 1: Percentage and frequency of patients according to IUGR, n=159

Table-3: Stratification of IUGR with respect to age, gestational age, parity and weight, n=159

	IUGR n (%)			*p*
	Yes	No	Total	
Age (years)				
18–30	13 (10)	117 (90)	130 (81.8)	0.550
31–40	4 (13.8)	25 (86.2)	29 (18.2)	
Gestational age (weeks)				
21–30	13 (9.7)	121 (90.3)	134 (84.3)	0.349
>30	4 (16.0)	21 (84)	25 (15.7)	
Parity				
0–2	14 (9.8)	129 (90.2)	143 (89.9)	0.271
3–4	3 (18.8)	13 (81.2)	16 (10.1)	
Weight (Kg)				
≤70	3 (2.3)	126 (97.7)	129 (81.1)	0.000
>70	14 (46.7)	16 (53.3)	30 (18.9)	
Total	17 (10.7)	142 (89.3)	159 (100)	

p<0.05

DISCUSSION

PIH is one of the leading risks for increased foetal and maternal morbidity, particularly in developing countries.[13] IUGR is considered one of the complications of PIH. It is essential to know its incidence in Pakistan. This study revealed a total of 10.7% incidence of IUGR in PIH patients presented to Ayub Teaching Hospital, Abbottabad, along with its comparison with age, gestational age, weight, and parity.

The incidence of IUGR among PIH patients varies locally and worldwide. As per Majeed S *et al*, conducted in Pakistan, it is 25.56%, which is higher compared to our findings, i.e. 10.7%.[14] Jabeen SS *et al*,

from Iran, found a quite high incidence of IUGR in PIH patients, 56.5%, which is much higher than ours.[6] Moreover, Zafar H *et al*, and Fox NS *et al,*, showed 28% and 48.8%, respectively.[10,11] To the best of our knowledge, only one study from Indonesia revealed a 4.4% prevalence of IUGR, which can be considered close to our result. The same study indicated that PIH cases have 1.72 times the chance of IUGR.[15] This indicates a substantial variation in the incidence of IUGR globally, with a range of 4.4 to 56.5%.

In our cohort, the mean maternal age was 27.691±2.63 years, with the majority in the younger age group, i.e., 81.8%. In contrast, the incidence of IUGR was higher in the late age group, i.e., 13.8%. This is in contrast to a study by Jabeen SS *et al,* where 66% of IUGR cases were found in early age groups.[7] Majeed S *et al*, reported that most cases of IUGR were found in the late age group (36–40 years), i.e., 38.9%, which supports our findings.[14] Likewise, the IUGR occurrence in PIH at different age groups is highly variable. Nevertheless, more cases of IUGR are expected among the elderly pregnant cohort with PIH. This can possibly be due to the physiological changes in reproductive organs, particularly the placental function, which compromises foetal growth.

The mean gestational age of our cohort was 28.553±2.19 weeks, having more cases of IUGR, i.e., 16% beyond 30 weeks of gestation. Jabeen SS *et al*, had 65.2% of IUGR cases among 31 or above the gestational age group.[7] In contrast, Majeed S *et al*, had more cases of IUGR, 28.8% below 28 weeks of gestation and 24.5% above 30 weeks .[14] Whatever, the literature supports more incidence of IUGR cases in PIH pregnant women starting late in the gestational period. This can be due to the exacerbation of placental insufficiency due to PIH and the increase in intrauterine foetus growth. The obstetricians need to be more vigilant beyond the 30th week of gestation with women having PIH.

Parity, another risk factor of IUGR, was also studied in this cohort, suggesting 14 nullipara women had IUGR compared to 3 multipara women without IUGR. In other studies like, Majeed S *et al,* had 27.2% IUGR cases with first and second parity, Febrina NAD *et al,* had 50% IUGR cases in primipara irrespective of PIH, and Jabeen SS *et al,* had 63.1% IUGR with nulliparous in PIH cases.[7,14,15] These indicate that multiparity is a contributing risk factor for IUGR. Growth limits may result from impaired uteroplacental circulation caused by the accumulated physiological demands of several pregnancies.[16]

Women weighing more than 70 kg is another critical determinant of IUGR. The current study resulted in 46.7% of samples appearing above 70kg. This highlights the complexity of obesity, rendering proper growth of the fetus simultaneously.[17] Although low maternal weight is a recognised risk factor for IUGR, our results show that being overweight may also have adverse effects, potentially via mechanisms such as worsening of hypertensive diseases and endothelial dysfunction.[18]

Due to time constraints, the author could not include other potential risks like obesity, diabetes, anaemia, pre-eclampsia, and some demographic variables, and therefore, it is strongly suggested to include these factors and find any association with IUGR. Although properly calculated, the sample size of the current study needs to be explored with a large cohort so that a generalizable projection of the pregnant women population can be drawn and presented to the local community.

CONCLUSION

The incidence of IUGR among women with PIH is low compared to neighbouring developing countries. This study's findings emphasise the significance of individualised perinatal monitoring, particularly among older, overweight, nulliparous, and beyond 30 weeks of gestation, on a priority basis.

REFERENCES

1. Luger RK, Kight BP. Hypertension in pregnancy. 2022 Oct. In: StatPearl [Internet] 2025. Treasure Island (FL): StatPearls Publishing; 2025.
2. Agarwal GS, Agrawal AK, Singhal D, Bawiskar D, Shedge SS. Pregnancy-induced hypertension pathophysiology and contemporary management strategies: A narrative review. Cureus 2024;16(7):e63961. DOI: https://doi.org/10.1002/hsr2.1274
3. Dapkekar P, Bhalerao A, Kawathalkar A, Vijay N. Risk factors associated with intrauterine growth restriction: A case-control study. Cureus 2023;15(6):e40178. DOI: https://doi.org/10.7759/cureus.40178
4. Dinu M, Stancioi-Cismaru AF, Gheonea M, Luciu ED, Aron RM, Pana RC, *et al*. Intrauterine growth restriction-prediction and peripartum data on hospital care. Medicina (Kaunas) 2023;59(4):773. DOI: https://doi.org/10.3390/medicina59040773.
5. Gordijn SJ, Beune IM, Thilaganathan B, Papageorghiou A, Baschat AA, Baker PN, *et al*. Consensus definition of foetal growth restriction: A Delphi procedure. Ultrasound Obstet. Gynecol. 2016;48:333–339.DOI: https://doi.org/10.1002/uog.15884.
6. Calek E, Binder J, Palmrich P, Eibensteiner F, Thajer A, Kainz T, *et al*. Effects of intrauterine growth restriction (IUGR) on growth and body composition compared to constitutionally small infants. Nutrients 2023;15(19):4158. DOI: https://doi.org/10.3390/nu15194158
7. Jabeen SS, Raoof M, Mumtaz F, Khan B, Shaheen Z. Intrauterine growth restriction among pregnant hypertensive women of urban and rural areas. Pak J Med Dent 2023;12(3):29–35. DOI: https://doi.org/10.36283/PJMD12-3/006
8. Barros FC, Barros AJ, Villar J, Matijasevich A, Domingues MR, Victora CG. How many low birthweight babies in low-and middle-income countries are pre-term? Rev Saude Publica 2011;45(3):607–16. DOI: https://doi.org/10.1590/S0034-89102011005000019
9. El-Baz MA, El-Deeb TS, El-Noweihi AM, Mohany KM, Shaaban OM, Abbas AM.. Environmental factors and apoptotic indices in patients with intrauterine growth retardation: a nested case-control study. Environ Toxicol Pharmacol

2015;39(2):589–96. DOI: https://doi.org/10.1016/j.etap.2015.01.009
10. Zafar H, Naz M, Fatima U, Irshad F. Frequency of IUGR in pregnancy induced hypertension. J Uni Med Dent Coll 2012;3(2):8–13.
11. Fox NS, Saltzman DH, Oppal S. The relationship between pre-eclampsia and intrauterine growth restriction in twin pregnancies. Am J Obstet Gynecol 2014;211(4):422.e1–5.
12. Almuhaytib FA, AlKishi NA, Alyousif ZM. Early Onset pre-eclampsia and intrauterine growth restriction: A case report. Cureus 2023;15(1):e33919. DOI: https://doi.org/10.7759/cureus.33919
13. Gudeta TA, Regassa TM. Pregnancy induced hypertension and associated factors among women attending delivery service at Mizan-Tepi University Teaching Hospital, Tepi General Hospital and Gebretsadik Shawo Hospital, Southwest, Ethiopia. Ethiop J Health Sci 2019;29(1):831–40. DOI: https://doi.org/10.4314/ejhs.v29i1.4
14. Majeed S, Khawaja A, Tunio NA, Unar F, Khan FA. To determine frequency of intrauterine growth restriction in pregnancy induced hypertension. Pak J Med Health Sci 2020;14(2):240–2.
15. Febrina NAD, Primadi A, Lestari BW. Association between intrauterine growth restriction and pregnancy hypertension. Althea Med J 2016;3(2):212–5. DOI: https://doi.org/10.1186/s12889-019-7973-9
16. Dumolt JH, Powell TL, Jansson T. placental function and the development of foetal overgrowth and foetal growth restriction. Obstet Gynecol Clin North Am 2021;48(2):247–66. DOI: https://doi.org/10.1016/j.ogc.2021.02.001
17. Napso T, Lean SC, Lu M, Mort EJ, Desforges M, Moghimi A, *et al*. Diet-induced maternal obesity impacts feto-placental growth and induces sex-specific alterations in placental morphology, mitochondrial bioenergetics, dynamics, lipid metabolism and oxidative stress in mice. Acta Physiol (Oxf) 2022;234(4):e13795. DOI: https://doi.org/10.1111/apha.13795
18. Qamar MK, Khan YQ, Irum N, Manzppr S. Frequency of intrauterine growth retardation in obese pregnant females: A cross sectional study in two tertiary care hospitals of Pakistan. J Soc Obstet Gynaecol Pak 2021;11(4):246–9.

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5.2 Last Pages (Tables and Figures): Include tables and figures after the main text, and ensure tables and figures are appropriately referenced in the Results section.

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✓ **Paper Size:** Use the standard A4 size (8.27 x 11.69 inches) for your manuscript.
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Chapter in a Book: Williams, R. Mindfulness Practices in Educational Settings. In: Brown A, ed. Advances in Mindfulness Research. ABC Publishers; 2018. p. 45-56.

Website: Mindfulness Institute. Introduction to Mindfulness Meditation. [Internet]. Available from: https://www.mindfulnessinstitute.com/intro-mindfulness. Accessed July 15, 2023.

Audio/Video File: Johnson S. Mindfulness Meditation: A Guided Practice. Audio recording. 2022. Available at: [URL].

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