Plagiarism in the Research Reports of Indian Doctoral Students: Causes and a Remedial Action Plan

Tapan Kumar Pradhan[1] and Ajit Kumar[*2]

∽   Many reputable academic journals have retracted research papers from Indian researchers because of plagiarism. The University Grant Commission, a representative organisation of the Indian government, is diligently endeavouring to ensure academic integrity by applying stringent guidelines. The present study aims to find the potential causes of the plagiarism found in the research reports of Indian doctoral students and to formulate a remedial action plan. A literature review was undertaken to identify incidences of plagiarism at educational institutions. Based on the review's insights, a survey was conducted to investigate doctoral students' awareness of plagiarism, including causes and remedial action plans. In addition, 21 interviews were conducted with senior academics and professionals from various academic disciplines to gain an understanding of their viewpoints. An analysis was then undertaken of the responses received through the questionnaires and interviews. The results suggested the widespread incidence of plagiarism and shed light on its causes. A remedial action plan emerged from the study, which included 1) establishing a research ethics committee at all academic or research institutions, 2) fostering a correct understanding of plagiarism and its implications by conducting training, workshops and awareness campaigns at an early stage of doctoral students' lives, 3) ensuring clarity of research purpose among doctoral students and emphasising the quality of research work, 4) developing academic writing skills, and 5) making anti-plagiarism software available free of charge to all students and faculty members. Indian students perceive the University Grant Commission's stringent guidelines as a good initiative. However, these guidelines cannot be implemented fruitfully without addressing the underlying causes of plagiarism.

Keywords: academic integrity, higher education, India, plagiarism, research ethics

---

1   School of Rural Management, XIM University, Bhubaneswar, India.
2   *Corresponding Author. Xavier Institute of Management, XIM University, Bhubaneswar, India; ajit@xim.edu.in.

Plagiatorstvo v raziskovalnih poročilih indijskih doktorskih študentov: vzroki in akcijski načrt za izboljšavo problematike

TAPAN KUMAR PRADHAN IN AJIT KUMAR

∾ Številne ugledne akademske revije so umaknile raziskovalna dela indijskih raziskovalcev zaradi plagiatorstva. University Grant Commission (t. i. Univerzitetna komisija za štipendije), reprezentativna organizacija indijske vlade, si močno prizadeva zagotoviti akademsko integriteto z uporabo strogih smernic. Namen te študije je poiskati morebitne vzroke in oblikovati akcijske načrte za izboljšavo problematike kot odziv na plagiatorstvo v raziskovalnih poročilih indijskih doktorskih študentov. Opravili smo pregled literature, da bi našli primere plagiatorstva v izobraževalnih ustanovah. Na podlagi spoznanj iz pregleda smo izvedli anketo, da bi opredelili, kako ozaveščeni so o plagiatorstvu doktorski študentje, ter vključili tudi vzroke in akcijske načrte za izboljšavo problematike. Poleg tega smo opravili 21 intervjujev z vodilnimi akademiki in s strokovnjaki iz različnih akademskih disciplin, da bi razumeli njihova stališča. Analizirali smo odgovore, ki smo jih prejeli z vprašalniki in intervjuji. Rezultati so pokazali, da je plagiatorstvo zelo razširjeno, in osvetlili vzroke zanj. Poleg tega je iz študije izšel akcijski načrt za izboljšavo problematike, ki je vključeval: 1) ustanovitev komisije za raziskovalno etiko na vseh akademskih ali raziskovalnih ustanovah; 2) spodbujanje pravilnega razumevanja plagiatorstva in njegovih posledic z izvajanjem usposabljanj, delavnic in kampanj ozaveščanja v zgodnji fazi statusa doktorskih študentov; 3) zagotavljanje jasnosti raziskovalnega namena pri doktorskih študentih in poudarek na kakovosti raziskovalnega dela; 4) razvoj veščin akademskega pisanja; 5) omogočanje brezplačne uporabe programske opreme proti plagiatorstvu za vse študente in člane fakultete. Indijski študentje so stroge smernice University Grant Commission (Univerzitetne komisije za štipendije) za univerzitetne štipendije razumeli kot dobro pobudo, vendar pa jih ni mogoče uspešno izvajati, če se ne odpravijo temeljni vzroki za plagiatorstvo.

Ključne besede: akademska integriteta, visokošolsko izobraževanje, Indija, plagiatorstvo, raziskovalna etika

Introduction

Many reputable academic journals have retracted research papers authored by Indian researchers because of plagiarism. Plagiarised articles, even reputed research journals, have been hit hard, resulting in large-scale retractions. Retracting papers worldwide has increased sevenfold from 2004 to 2009 (Steen, 2011). From 2011 to 2019, over 980 articles were withdrawn from India alone: 330 were reported for text plagiarism and 127 for image duplication (Prasad, 2019). Many researchers have found that the types of plagiarism commonly found in articles published in health journals include phrases copied from Wikipedia and tables or images reproduced from websites without attribution (Kumari et al., 2018; Mukherjee et al., 2018; Sharma & Singh, 2011). A significant factor contributing to plagiarism is the proliferation of predatory journals that charge fees from contributors without diligent peer review (Frandsen, 2019; Thomas, 2020). Around 20,000 research journals are published in India (Priyadarshini, 2018), but fewer than 500 of them are indexed by citation databases such as SCOPUS and Web of Science, implying that the rest are sub-standard (Mills & Inouye, 2021; Priyadarshini, 2018). The proliferation of predatory journals is a crucial reason behind the changes made by the University Grants Commission of India (UGC), a statutory organisation of the Indian Government responsible for coordinating, determining and supporting education, examinations and research in university education (Patwardhan, 2019b). In 2010, the UGC began evaluating current and potential university faculty members by their publications. Later, in 2013, it mandated that graduate students must publish two research articles to receive a doctoral degree (Hegde & Patil, 2021). Although well intended, this regulation encouraged corruption. It resulted in thousands of students being desperate for publication, which, in conjunction with ineffective monitoring, led to the mushrooming of predatory publishing (Patwardhan, 2019a). The predatory journal publishes articles in return for a fee without going through the rigour of peer review (Hegde & Patil, 2021).

In 2016, in order to curb this unwanted trend, the UGC prescribed stricter eligibility criteria and screening tests for doctoral admission aimed at filtering out candidates who lack research reasoning (Patwardhan, 2019a, 2019b). The UGC mandated submission and unrestricted access to all theses or dissertations through the Information and Library Network (INFLIBNET) to facilitate the detection of plagiarism. Furthermore, in 2018, the UGC announced the establishment of a dedicated Consortium for Academic and Research Ethics (CARE) (Patwardhan, 2019a, 2019b; Patwardhan & Nagarkar, 2021; Patwardhan & Thakur, 2019). The UGC-CARE is responsible for identifying, continuously monitoring

and maintaining a referral list of quality journals across disciplines. Only research articles published in the CARE Reference List of Quality Journals (CARE List) are considered for all academic purposes (Garanayak & Ramaiah, 2019; Patwardhan & Nagarkar, 2021; Patwardhan & Thakur, 2019). The UGC further mandated Indian universities to screen all theses, dissertations, term papers and publications through plagiarism detection services, and the maximum penalty was prescribed in cases of plagiarism detected in core work, such as abstracts, summaries, results and conclusions (Lahiry & Sinha, 2019). In non-core areas, plagiarism was quantified into four categories according to the content copied: below 10% (can be overlooked), Level 1 (10–40%), Level 2 (40–60%) and Level 3 (above 60%) (Lahiry & Sinha, 2019). For a Level 3 offence, students can lose their registration, while faculty members can be barred from further publications or even lose salary increments (Lahiry & Sinha, 2019).

Several researchers have pointed out shortcomings in the radical initiatives by the UGC. For instance, an article containing 10% text copied from core areas can be labelled plagiarised, while another article copying 25% from non-core areas may not (Kadam, 2018; Pandita & Singh, 2019). Furthermore, two articles may appear similar without actually being plagiarised, in which case universities may require expert human intervention to assess the articles' originality instead of mechanical word-matching software tools. Such human intervention can become subjective and hence potentially discriminatory for individual researchers. In view of all of this unintended chaos, in 2022, the UGC proposed doing away with the mandatory requirement of publishing research papers in peer-reviewed journals for doctoral thesis submission (Iftikhar, 2022), instead allowing higher education institutions to formulate rules and regulations. It looks like the UGC plans to return to the era before 2013 (Iftikhar, 2022). However, the question remains: Why did linking faculty performance and doctoral students' mandatory requirements with paper publications have undesired consequences in India, such as predatory journals full of plagiarised articles, but not in developed nations like Taiwan, Hong Kong, Singapore, USA, Canada, Australia and Japan (Sureda-Negre et al., 2022)? In order to understand plagiarism better, we reviewed the Indian literature to reveal the underlying potential causes. A study was then conducted to obtain further insight into the causes of plagiarism and to determine a remedial action plan.

Literature Review

The literature review we conducted revealed several causes of plagiarism. The first factor that drives Indian students to plagiarise is a fundamental

misunderstanding about plagiarism. Students must understand plagiarism as research misconduct (Thakur & Lahiry, 2019). A study was conducted by Kumari and Lakshmi (2015) on the awareness of plagiarism among doctoral students at the Sri Venkateswara University in Tirupati, Andhra Pradesh. An analysis of the 123 responses indicated that 100% of the respondents knew about the punishment for plagiarism, 98% knew about various anti-plagiarism tools, and 93% thought that plagiarism concerned paraphrasing a paragraph. However, 26% of the respondents felt that composing a paragraph by taking short phrases from works by other authors and joining them with their own words was acceptable. More than 50% of the respondents reported difficulty with academic writing skills and 26% reported poor writing skills. Likewise, Varghese and Jacob (2015) conducted a study using a quiz and a questionnaire on 423 medical students at Vellore in Tamil Nadu, India. The quiz was conducted to assess the students' knowledge of plagiarism. A self-administered questionnaire was used to determine their attitude towards plagiarism. The results showed a negative correlation between plagiarism awareness scores and a permissive attitude toward plagiarism (Sorgo et al., 2015). Men were found to have a more permissive attitude towards plagiarism than women, but the students' age and educational background did not correlate with their knowledge of or attitude towards plagiarism. The researchers found that the medical students' knowledge of plagiarism was relatively low.

The second cause of plagiarism is a negative perception of the research ethics committee that supervises research from its start until completion. Gopinath et al. (2014) studied the research ethics committee awareness of 96 faculty members of a dental college in India. About 30% believed the research ethics committee would cause delays or make the research more challenging.

The third reason for plagiarism could be rooted in Indian education and job culture. For a long time, the Indian education system could not understand the declining quality of research (Pushkar, 2018). For years, plagiarism was not considered something that needed to be addressed (Pushkar, 2015) and it is only recently that it has attracted more attention. Moreover, India has not inculcated an awareness of plagiarism in children from their school days. At an early age, Indian children are not allowed to think independently. Parents decide everything for them, such as which school they will go to, which field they will study and whom they will marry. Schools even provide students with notes and answers: students are expected to write the same response during examinations. Most teachers do not like it if the students deviate from the notes provided and write answers in their own words, often deducting marks for doing so. Students are therefore taught to follow the trodden path and are not encouraged to think

independently from a young age (Handa & Power, 2005). This type of education often kills children's creative abilities (Gradišek, 2012). Somewhere along the way, they stop thinking and blindly follow what they are told or expected to do (Đurišić & Bunijevac, 2017). These schools encouraged pupils to replicate their teachers' ideations (Ma et al., 2008). Thus, creativity was suffocated and copying text became an everyday task (Ma et al., 2008). In such a culture, the concept of self-plagiarism is beyond the students' imagination (Kanchan et al., 2010). When they apply for a job, they find it challenging to think innovatively. As per UGC guidelines, those involved in teaching and research receive promotions and progress in their careers depending on the number of papers published (Padmanabhan, 2017; Šorgo & Heric, 2020). Universities maintain constant pressure to publish in order to obtain better rankings, such as from the National Assessment and Accreditation Council, the National Institute Ranking Framework and QS World University Ranking. Creative work takes time, and people often struggle to be creative under pressure (Pradhan & Pradhan, 2017). Therefore, teachers and researchers are, to a degree, forced to copy and edit someone else's work. Another problem in the workplace is work credit to the deserving. Often, the person who actually does the job receives limited credit for his or her work. The lack of work credit makes the person unwilling to work in a fully committed way, so papers are prepared half-heartedly and derived from plagiarising the work of others. Moreover, many Indians believe in helping friends and classmates, and their help is glorified and talked about (Parikh, 2021).

The fourth factor is that cultural and language barriers prevent open discussion about plagiarism between students and teachers, as rote learning is often taught. Researchers from non-English-speaking localities are obviously disadvantaged (Chaddah, 2014), with the lack of original thinking skills in English forcing many students to copy text from others, despite English being a second or third language.

Fifthly, Information and Communication Technologies (ICT) have made the plagiarist's job much easier by providing instant internet access to the work of others, with the ability to copy-paste with the mere click of a mouse. On the other hand, ICT has helped curb plagiarism by developing anti-plagiarism software and online tools for detecting plagiarism. Pathak and Malakar (2016) conducted a telephone survey of 150 students pursuing higher studies at Gauhati University regarding anti-plagiarism software usage. Of the 100 respondents, 85% indicated that they were aware of such software and 84% said it benefited them. Ten percent of the respondents reported that their papers had exceeded the 20% similarity limit prescribed by their university. Another 24% reported

that the similarity level ranged from 11% to 20%. The authors also compared seven North-East States universities that used different plagiarism detection software, such as Turnitin and Urkund. Badrinath and Prakash (2016) conducted a case study on the incidence of plagiarism at the Alliance University, City Campus, Bengaluru, by analysing various reports submitted by students during the years 2014 (325 reports) and 2015 (220 reports). Their analysis revealed that the percentage of reports showing a similarity score above 75% had decreased from 12% in 2014 to 8.2% in 2015. Similarly, the percentage of reports showing similarity scores in the range 50–74% dropped sharply to 30.4–16.2% over the same year. The authors attribute this significant improvement to the introduction of Turnitin software on the campus in 2014 and the subsequent training and awareness campaign aimed at faculty members. However, various plagiarism detection programmes, such as Turnitin, come with challenges: they are too costly for individual students and advisors, while some freely available software is unreliable and requires interpretation by trained persons (Misra et al., 2017).

Search engines like Google provide free look-up options, effectively detecting simple copy-paste type plagiarism and poor paraphrasing, but failing to pick up complex mosaic-type plagiarism (Mondal & Mondal, 2018). According to most researchers, paraphrasing constitutes plagiarism, as it involves stealing ideas (Dhammi & Ul Haq, 2016). Paraphrasing software, such as Article Rewriter, makes it challenging to identify subtle plagiarism. Most anti-plagiarism software can only detect word-to-word copying, while detecting data manipulation and the adoption of others' ideas is difficult to spot (Rao, 2008). People with sophisticated linguistic abilities can paraphrase and go unnoticed by anti-plagiarism software. Using a structured questionnaire, Kumar and Mohindra (2019) studied plagiarism among Panjab University students. An analysis of the 152 responses showed that simple copy-paste was the most popular method of plagiarism and that collusion between students made it exceedingly difficult to identify the real culprits.

Research problem

Apart from the five reasons mentioned above, other factors that contribute to plagiarism include ghost writers who write papers for others for payment, a nexus among researchers who have each other's names as authors of articles, the publication of sub-standard conference proceedings as research work, and vanity production of edited books that include chapters by unrecognised authors (Pandita & Singh, 2019). In summary, plagiarism is a problem

in India that is not easy to address. Doctoral students and advisors are two key stakeholders in this issue. Although a few studies have been conducted to understand the plagiarism problem, most of them have focused on the perspective of doctoral students, while the side of the advisor has been relatively neglected. Other studies have highlighted the problem of plagiarism but failed to suggest a potential remedial action plan to address the issue. There is a need for comprehensive research.

Therefore, we conducted a study to understand the causes of plagiarism and formulate a potential remedial action plan from the perspectives of key stakeholders: doctoral students and advisors.

Method

As mentioned in the Introduction and the Literature Review, doctoral students and advisors are two key stakeholders in this research and paper publication ecosystem. In order to understand doctoral students' perspectives, we conducted a survey.

Participants

Table 1 presents respondents' demographic and academic profiles (Questions 1–10). We can see that the respondents are doctoral students with a diverse mix of gender, age, educational qualification, employment status, research experience, research publication, publication in a peer-reviewed journal, attendance of a research ethics course before doctoral registration, presence of a research ethics committee at the institution of the respondents, and educational level to which research ethics needs to be taught. A total of 36% of the students surveyed had not taken or were not aware of any research ethics course, while 41% were unaware of the presence of a research ethics committee at their institutions. Ideally, a research ethics course should be the first course students take on entering a doctoral programme. Moreover, almost 95% of the doctoral students surveyed agreed that research ethics courses should be taught at high school, intermediate, graduate or postgraduate levels.

Table 1

Demographic and academic profile of respondents (N = 105)

PART 1			
Descriptive Questions	**Options**	**Frequency**	**Percentage (%)**
1. Gender	Male	73	69.5
	Female	32	30.5
2. Age	Up to 25	5	4.8
	26–30	41	39.0
	31–35	25	23.8
	36–40	13	12.4
	Above 40	21	20.0
3. Educational qualification	MA	19	18.1
	MSc	24	22.9
	MCom	4	3.8
	MBA	11	10.5
	MTech	27	25.7
	MPhil	11	10.5
	PhD	9	8.6
	Other	0	0
4. Employment status	Employed	49	46.7
	Unemployed	56	53.3
5. Research experience	< 1 year	21	20.0
	1–2 years	22	21.0
	3–4 years	20	19.0
	5–6 years	12	11.4
	> 6 years	26	24.8
	NA	4	3.8
6. Research publication	NIL	26	24.8
	1–2 papers	18	17.1
	3–5 papers	21	20.0
	6–10 papers	19	18.1
	11–20 papers	11	10.5
	> 20 papers	10	9.5
7. Publication in a peer-reviewed journal	Yes	75	71.4
	No	30	28.6
8. Research ethics course before doctoral registration	Yes	67	63.8
	No	32	30.5
	Not Sure	6	5.7
9. Presence of a research ethics committee at the institution of the respondents	Yes	62	59.0
	No	19	18.1
	Not Sure	24	22.9
Prescriptive Question			
10. Educational level to which research ethics needs to be taught	High School	15	14.3
	Intermediate	6	5.7
	Undergraduate	53	50.5
	Postgraduate	23	21.9
	MPhil	3	2.9
	PhD	5	4.8

Instruments

The study used a questionnaire with three parts (see Appendix 1). In the first part (Questions 1–10), we gathered the demographic and academic profiles of the doctoral students, the completion of a research ethics course before or after doctoral registration, the presence of a research ethics committee at the institution, and opinions about the educational level to which research ethics needs to be taught. We did not collect any identifying details of the respondents. The second part used the Harris scale (Question 11), with 12 statements to be rated on a Likert-type scale: (1) strongly agree, (2) agree, (3) neutral, (4) disagree, and (5) strongly disagree (Harris, 2001). The Harris scale has been used and cited by several other researchers whose results have been published in peer-reviewed papers (Ehrich et al., 2016; Javaid et al., 2021; Khairnar et al., 2019). Moreover, after discussion and mutual consensus with one research ethics professor, PhD students and one linguistics expert, we agreed that the Harris scale was simple to understand, easy to use and suitable for Indian doctoral students compared to some other scales, such as those by Mavrinac et al. (2010), Farooq and Sultana (2022), and others. The third part of the survey (Question 12) involved an open-ended question (Question 12: Please offer your suggestions for improving research ethics, including curbing plagiarism in your field of study) requiring a descriptive answer.

In order to understand the doctoral advisor perspective, interviews were conducted with 21 advisors of doctoral students who supervised doctoral students, engaged in research projects and had significant peer-reviewed publications. The interviews were semi-structured and open-ended, centred around the following open-ended questions: 1) What is the extent of plagiarism in your area of research and within your own institution, and how would you describe the trend of the incidence of plagiarism? 2) In your opinion, what makes researchers adopt such unfair practices? (3) What, in your opinion, are the effective methods of curbing plagiarism? (4) How effective is anti-plagiarism software? (5) If you have used such software, what are the advantages and disadvantages? (6) Have you gone through the latest UGC guidelines on plagiarism? If so, how do you think the UGC guidelines will help curb plagiarism?

Research design

The questionnaire was circulated to almost 950 doctoral students at various universities, colleges and research institutions in India, with the responses being collected using Google Forms. A total of 105 valid responses

were received, three of which were removed because the respondents were not involved in any doctoral programme. The responses were analysed up to the second and third parts of the questionnaire, as summarised below in Tables 2–4 in the Results section. Table 2 summarises the responses to Question 11, which used the Likert scale. The text responses to Question 12 were collated in a file (word count: 2,322) and uploaded to the online tool Free WordCloud (https://monkeylearn.com/word-cloud/), which generated 50 words, their frequencies and relevance, as summarised in Table 3. These words, as well as combined words with similar meanings, were analysed manually. The analysis involved selecting interesting comments and putting them into containers called codes, as shown in the last column of Table 3. While deriving the codes and categories, the text responses were cross-referenced to avoid missing essential points. Two independent researchers (one applied linguistics expert and a doctoral advisor) were asked to check the codes. Based on their advice, a few minor changes were made to the codes and categories. Finally, we arrived at 21 codes and three categories, as shown in the last columns of Tables 3 and 4 in the Results section.

The interviews were conducted over the phone, with key points being noted in a Word document. The duration of each interview varied from 15 to 30 minutes. After conducting 21 interviews, we had complied a Word document with 7,243 words. The document was uploaded to the online software tool Free WordCloud (https://monkeylearn.com/word-cloud/), which generated 50 words, their frequencies and relevance, as summarised in Table 5. Table 5 was created in the same way as Table 3. Finally, we arrived at 21 codes and three categories, as shown in the last columns of Tables 5 and 6 in the Results section.

Results

Table 2 summarises the doctoral students' attitudes toward plagiarism, as determined in the second part of the questionnaire (Question 11). The values in the last column are a weighted mean, calculated based on the sum of the frequencies of Likert scale options multiplied by the weight assigned to each choice and then divided by the number of study respondents. The options were Strongly Disagree (SD), Disagree (DA), Not Sure (NS), Agree (AG) and Strongly Agree (SA), having weights 1, 2, 3, 4 and 5, respectively.

Table 2

Attitude towards plagiarism (N = 105)

PART 2						
	Frequency					
11. Statements	**Strongly Disagree (SD)**	**Disagree (DA)**	**Not Sure (NS)**	**Agree (AG)**	**Strongly Agree (SA)**	*****Weighted Mean**
i. Sometimes I feel tempted to plagiarise because so many other students are doing it.	60 (57%)	28 (27%)	7 (7%)	6 (6%)	4 (4%)	1.7
ii. I believe I know accurately what constitutes plagiarism and what does not.	2 (2%)	3 (3%)	16 (15%)	30 (29%)	54 (51%)	4.2
iii. Plagiarism is as bad as stealing the final exam ahead of time and memorising the answers.	5 (5%)	3 (3%)	11 (10%)	31 (30%)	55 (52%)	4.2
iv. If my roommate gives me permission to use his or her paper for one of my classes, I do not think there is anything wrong with doing that.	34 (32%)	23 (22%)	20 (19%)	18 (17%)	10 (10%)	*2.5*
v. Plagiarism is justified if the professor assigns too much work to the course.	61 (58%)	25 (24%)	9 (9%)	8 (8%)	2 (2%)	1.7
vi. Punishment for plagiarism in college should be light because students are young people just learning the ropes.	17 (16%)	32 (30%)	28 (27%)	21 (20%)	7 (7%)	*2.7*
vii. If a student buys or downloads a free whole research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university.	3 (3%)	19 (18%)	19 (18%)	22 (21%)	42 (40%)	3.8
viii. Plagiarism is against my ethical values.	2 (2%)	5 (5%)	4 (4%)	12 (11%)	82 (78%)	4.6
ix. Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal.	41 (39%)	28 (27%)	18 (17%)	14 (13%)	4 (4%)	*2.2*
x. It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarise yourself.	21 (20%)	19 (18%)	26 (25%)	27 (26%)	12 (11%)	*2.9*
xii. If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished also.	19 (18%)	11 (10%)	22 (21%)	30 (29%)	23 (22%)	*3.3*
xii. If students caught plagiarising received a special grade for cheating (such as XF) on their permanent transcript, that policy would deter many from plagiarising.	9 (9%)	9 (9%)	30 (29%)	29 (28%)	28 (27%)	3.6

*****Weighted Mean =(SD*1+DA*2+NS*3+AG*4+SA*5)/105**

Tables 3 and 4 summarise the textual feedback provided by 105 doctoral students for improving research ethics and curbing plagiarism. It has twelve codes and five categories. The codes and categories are further discussed below in the Discussion section.

Table 3

Summary of suggestions provided by doctoral students for improving research ethics and curbing plagiarism (N = 105, total word count = 2,322)

Word	Count	Relevance	Codes
research ethics	20	0.997	research ethics committee (1)
plagiarism	53	0.781	plagiarism (2)
students	49	0.378	doctoral students (3)
research work	5	0.262	research work (4)
early stage	4	0.21	education at an early stage (5)
importance of research	2	0.157	clarity in research purpose (6)
researchers	10	0.128	doctoral students (3)
plagiarism policy	2	0.105	plagiarism case handling policy (7)
awareness	11	0.09	awareness through various courses (8)
quality of research	1	0.079	emphasis on the quality of research (9)
problem of life	1	0.079	clarity in research purpose (6)
academic writing methods	1	0.079	academic writing skill development (10)
institutional policy implementation	1	0.079	plagiarism case handling policy (7)
proper learning session	1	0.079	education at an early stage (5)
goal of research	1	0.079	clarity in research purpose (6)
spirit of research	1	0.079	clarity in research purpose (6)
short terms course	1	0.079	awareness through various courses (8)
show ethics rules	1	0.079	plagiarism case handling policy (7)
concept of plagiarism	1	0.079	awareness through various courses (8)
effects of plagiarism	1	0.079	consequences of plagiarism (11)
blind peer review	1	0.079	research ethics committee (1)
monitoring system in place	1	0.079	research ethics committee (1)
ability of scholars	1	0.079	awareness through various courses (8)
set of guidelines	1	0.079	plagiarism case handling policy (7)
strong quality control	1	0.079	emphasis on the quality of research (9)
regular awareness programme	1	0.079	awareness through various courses (8)
fear of consequences	1	0.079	consequences of plagiarism (11)
knowledge research writing	1	0.079	academic writing skill development (10)
field of research	1	0.079	clarity in research purpose (6)
PhD course work	1	0.079	awareness through various courses (8)
field of study	1	0.079	clarity in research purpose (6)
a sense of purpose	1	0.079	clarity in research purpose (6)
sake of research	1	0.079	clarity in research purpose (6)
lower class everybody	1	0.079	clarity in research purpose (6)
plagiarism detection tools	1	0.079	plagiarism detection tools (12)

Word	Count	Relevance	Codes
honest academic work	1	0.079	research ethics committee (1)
case of plagiarism	1	0.079	plagiarism case handling policy (7)
undergraduate level students	1	0.079	education at an early stage (5)
stage of education	1	0.079	education at an early stage (5)
issues of research	1	0.079	clarity in research purpose (6)
lack of patience	1	0.079	consequences of plagiarism (11)
previous year questions	1	0.079	research work (4)
discussion of effects	1	0.079	consequences of plagiarism (11)
beginning of course	1	0.079	education at an early stage (5)
questions lack clarity	1	0.079	clarity in research purpose (6)
quality assurance committee	1	0.079	research ethics committee (1)
strict disciplinary action	1	0.079	plagiarism case handling policy (7)
special awareness programme	1	0.079	awareness through various courses (8)
new synonymous word	1	0.079	plagiarism case handling policy (7)
research ethics certificate	1	0.079	research ethics committee (1)

Table 4

Categories derived by combining twelve codes obtained from the text analysis of doctoral students' responses

Codes (1–12)	Categories
research ethics committee (1)	
plagiarism case handling policy (7)	research ethics committee, plagiarism case handling policy, and consequences of plagiarism
consequences of plagiarism (11)	
plagiarism (2)	
awareness through various courses (8)	plagiarism awareness and education, and consequences at an early stage
education at an early stage (5)	
clarity in research purpose (6)	
doctoral students (3)	clarity in research purpose among doctoral students, and emphasis on the quality of research work
emphasis on the quality of research (9)	
research work (4)	
academic writing skill development (10)	academic writing skill development
plagiarism detection tools (12)	plagiarism detection tools

Tables 5 and 6 summarise the research advisors' suggestions for improving research ethics and preventing plagiarism. It has 21 codes and three categories. The categories and codes are further examined below in the Discussion section.

Table 5

Summary of suggestions provided by research advisors for improving research ethics and curbing plagiarism (N = 21)

Word	Count	Relevance	Codes (1–21)
plagiarism	104	0.66	Loopholes in plagiarism detection software (1)
software	28	0.176	Free availability of anti-plagiarism software (2)
paper	21	0.248	Plagiarised works already in mass circulation (3)
research guide	14	0.996	Tacit collusion among research guides (4)
UGC guidelines	13	0.92	Research qualifications de-linked from job appointments and promotions (7)
suggestions	12	0.26	Research qualifications de-linked from job appointments and promotions (7)
research area	11	0.843	An independent research committee decides the area of research (8)
publications	11	0.164	Plagiarised works already in mass circulation (3)
plagiarism software	10	0.766	Loopholes in plagiarism detection software (1)
plagiarism incidence	6	0.46	Plagiarised works already in mass circulation (3)
incidence of plagiarism	5	0.575	Plagiarised works already in mass circulation (3)
sensitisation	5	0.184	Sensitisation and accountability of research guides and supervisors (6)
form of plagiarism	4	0.46	Plagiarised works already in mass circulation (3)
area of research	4	0.46	An independent research committee decides the area of research (8)
external expert	4	0.307	Comprehensive online tests conducted by external experts (9)
proper implementation	4	0.307	Rules about plagiarism documented in clear and straightforward language (10)
old dissertation	4	0.307	Old dissertations re-submitted (11)
research scholars	4	0.23	Students' freedom to frame their research objectives and hypotheses (12)
implementation of plagiarism	3	0.345	Rules about plagiarism documented in clear and straightforward language (10)
independent research committee	3	0.345	An independent research committee decides the area of research (8)
accountability of research	3	0.345	Sensitisation and accountability of research guides and supervisors (6)
art of plagiarism	3	0.345	Research guides help teach the art of plagiarism (5)
plagiarism detection software	3	0.345	Loopholes in plagiarism detection software (1)
selection of examiner	3	0.345	Unfair selection of examiners for dissertations (13)
research qualifications	3	0.345	Research qualifications de-linked from job appointments and promotions (7)
comprehensive online test	3	0.345	Comprehensive online tests conducted by external experts (9)

Word	Count	Relevance	Codes (1–21)
specialised research writing	3	0.345	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
oriented curriculum	3	0.23	Practical-oriented curriculum emphasising creativity (15)
free availability	3	0.23	Free availability of anti-plagiarism software (2)
moral suasion	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
worldwide database	3	0.23	A worldwide database of all papers with keywords in English and primary languages (16)
social stricture	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
straightforward language	3	0.23	Rules about plagiarism documented in clear and straightforward language (10)
uniform standard	3	0.23	Lack of uniform standards in identifying plagiarism (17)
strict regulations	3	0.23	Strict regulations and penalties (18)
tacit collusion	3	0.23	Tacit collusion among research guides (4)
jobs appointment	3	0.23	Research qualifications de-linked from job appointments and promotions (7)
training programme	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
primary language	3	0.23	A worldwide database of all papers with keywords in English and primary languages (16)
academic integrity	3	0.23	Plagiarised works already in mass circulation (3)
unfair selection	3	0.23	Unfair selection of examiners for dissertations (13)
plagiarism regulations	3	0.23	Non-proper implementation of plagiarism regulations (20)
research objectives	3	0.23	Students' freedom to frame their research objectives and hypotheses (12)
widespread corruption	3	0.23	Widespread corruption in the country (21)
extent of plagiarism	2	0.23	Plagiarised works already in mass circulation (3)
Sahitya Akademi Award	2	0.23	Research qualifications de-linked from job appointments and promotions (7)
Bank of India	2	0.23	Research qualifications de-linked from job appointments and promotions (7)
incident of plagiarism	2	0.23	Plagiarised works already in mass circulation (3)
topic of research	2	0.23	An Independent research committee decides the area of research (8)
list of examiners	2	0.23	Research guides are not allowed to submit examiners' lists to evaluate the thesis (19)

Table 6

Categories derived by combining the 21 codes obtained from the transcript of the 21 interviews of research advisors

Codes (1– 21)	Categories
Old dissertations re-submitted (11)	The extent of plagiarism in the interviewee's research field
Tacit collusion among research guides (4)	
Research guides help teach the art of plagiarism (5)	
Students' freedom to frame their research objectives and hypotheses (12)	
Unfair selection of examiners for dissertations (13)	
Lack of uniform standards in identifying plagiarism (17)	Reasons that encourage researchers to adopt unfair practices
Non-proper implementation of plagiarism regulations (20)	
Loopholes in plagiarism detection software (1)	
Plagiarised works already in mass circulation (3)	
Widespread corruption in the country (21)	
An independent research committee decides the area of research (8)	
Comprehensive online tests conducted by external experts (9)	
Research guides are not allowed to give examiners' lists to evaluate the thesis (19)	
Research qualifications de-linked from job appointments and promotions (7)	
Free availability of anti-plagiarism software (2)	
A worldwide database of all papers with keywords in English and primary languages (16)	Potential Methods to curb plagiarism
Practical-oriented curriculum emphasising creativity (15)	
Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)	
Rules about plagiarism documented in clear and straightforward language (10)	
Strict regulations and penalties (18)	
Sensitisation and accountability of research guides and supervisors (6)	

Discussion

This section discusses the study findings from two perspectives: that of the doctoral students and that of the advisors.

Findings from the doctoral students' perspective

The key findings of this study from the doctoral students' perspective are presented in Tables 2– 4. Question 11 (12 statements) found that plagiarism awareness is not encouraging among students pursuing doctoral studies in India. The responses to Statements 1, 2, 3, 5, 7, 8 and 12 in Table 2 are on the expected line. However, the respondents' confidence in plagiarism awareness seemed feeble in Statements 4, 6, 9, 10 and 11, as reflected in Table 2 of the Results. For instance, there is a low score for Statement 4: "If my roommate gives me permission

to use his or her paper for one of my classes, I do not think there is anything wrong with doing that". Other statements with low scores, as shown in Table 2, are Statement 6: "Punishment for plagiarism in college should be light because students are young people just learning the ropes", Statement 10: "It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarise yourself", Statement 9: "Because plagiarism involves taking another person's words and not his or her materials goods, plagiarism is no big deal", Statement 11: "If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished too" (Ehrich et al., 2016). The reason for these low scores could be rooted in Indian education, employment and culture. For the students, how could something be called cheating when there was proper permission to use it? Students are taught to help each other from childhood onwards and cannot imagine that they are not supposed to share assignments. Moreover, it is inconceivable to Indian students that they cannot freely reuse self-created artefacts. In the past, many researchers have been caught cheating red-handed, yet they continue to work as though nothing had happened. Indian IP and copyright laws are not strict enough to punish cheaters effectively in academia, while institute policies are too lenient, with many institutes being unaware of the existence of a research ethics committee. In India, any wrongdoing is not considered a crime until money is involved. In recent years, however, the Indian government has been taking initiatives to curb unethical practices in various ways. Restoring ethics in education will take time, as it involves a change in mindset and culture. Good values, discipline and habits as well as ethical ways of living become part of one's life if they are taught in primary school (Pallela & Talari, 2016).

Another important finding is the twelve codes (Table 3) and five categories (Table 4) from the text response to Question 12 of the survey questionnaire. The categories and codes are discussed below:

- *Research ethics committee, plagiarism case handling policy and consequences of plagiarism.* As identifying plagiarism is a specialised task, Chaddah (2014) suggests that all research institutions should establish a University Plagiarism Cell or Research Ethics Committee to assist manuscript submission or investigate plagiarism complaints. Research Ethics Committees should have a fair representation of faculty members, domain experts, external legal professionals and student representatives, and could be assisted by specially created Plagiarism Cells, as recommended by Chaddah (2014). These cells would be composed of specialist committees and each submitted manuscript and complaint received would be referred to the relevant committee. Research on

anti-plagiarism policy by the Higher Education Regulatory body found a lack of uniformity in the adopted anti-plagiarism policy before the UGC guidelines of 2018. As universities are now empowered to impose a penalty for plagiarism, an appellate authority should be in place to deal with complaints of unfair treatment of students.

- *Plagiarism awareness and education, and consequences at an early stage.* Research ethics and plagiarism awareness should be included in undergraduate and postgraduate programmes, and should be mandatory at the doctoral level. Gopinath et al. (2014) found a positive correlation between prior research experience and familiarity with research ethics principles. Over 93% of respondents supported teaching research ethics at the postgraduate level.

- *Clarity in research purpose among doctoral students and emphasis on quality of research work.* Many doctoral students are unclear about what they are doing and how quality research is conducted. Although a research methodology course is taught in almost all doctoral programmes, it is clear from the respondents' comments that these courses are not taught in effective ways. Students will resort to existing material when the research purpose is unclear and plagiarised.

- *Academic writing skill development.* Academic writing differs from other forms of writing, such as business, general and technical writing. It has a rigid structure and requires learning. Therefore, a writing course might help students. Some doctoral students perform quality research, but do not know how to express this research, and so resort to plagiarising.

- *Plagiarism detection tools.* Anti-plagiarism software should be accessible to all students and faculty members. The government could develop specialised software for Indian students, as the commercially available software is rather costly. Paraphrasing detection tools can be expanded to identify copying from others' work ideas. There is a great deal of published research literature, mainly in the discipline of computer science, that can be used to identify translation plagiarism or paraphrasing (Kent & Salim, 2010; Mustofa & Sir, 2013; Naik et al., 2015; Tlitova et al., 2020).

Findings from the advisors' perspective

The findings from the advisors' perspective are expressed in 21 codes (Table 5) and three categories (Table 6) derived from transcripts of interviews conducted with 21 research advisors. The categories and codes are discussed below:

- *The extent of plagiarism in the interviewee research field.* Most of the interviewees accepted that plagiarism is widely present in their area. 1)

Dissertations written before the stringent UGC guidelines came into force are re-submitted by other students after changing the title and making other cosmetic changes. 2) There is tacit collusion among research guides to get each other's students to qualify through various tests. 3) Research guides often teach their students the creative art of plagiarism, including how to use earlier dissertations with minor modifications. 4) Research guides avoid the burden of designing the methodology and research framework: students can frame their research objectives and hypotheses by copying earlier works in the field. 5) The research subject matter is deliberately chosen from areas where similar studies have been conducted. When selecting examiners for dissertations, the guide and the evaluation committee deliberately avoided people who had done work in the field: examiners are chosen from a known circle with a mutual understanding that they will help each other. 6) Books translated from other languages are awarded as original works by bypassing the scrutiny of subject experts.

- *Reasons that encourage researchers to adopt unfair practices.* Excellent insights were gained into why researchers adopt unfair practices. 1) Most of the interviewees reported that a lack of uniform standards in identifying plagiarism helps clever people escape unpunished. 2) The interviewees were concerned about how plagiarism regulations might be implemented when copyrights and patents are protected due to legal loopholes. Given the country's legal loopholes, the impartial implementation of the UGC guidelines is doubtful; thereby, innocent people can be selectively targeted. 3) Ghost writers are being paid to write papers and theses. 4) Anti-plagiarism software can check content similarity, but not idea similarity and smart paraphrasing. Plagiarism detection software provides users with clues on how to bypass it, and people using such software 10–12 times can learn to circumvent it. 5) Thousands of plagiarised works have already entered mass circulation, and there is a lack of a clear plan to remove them from the public domain. 6) Plagiarism reflects widespread corruption in the country. Most people are afraid to point out instances of plagiarism due to fear of retribution from influential people and a lack of faith in the system.

- *Potential methods to curb plagiarism.* The interviewees also suggested improving academic integrity in higher education research. 1) Research subject areas should be determined by an independent expert committee, which could be done by considering various national and international priorities. Prospective researchers could then choose their topics from the

list created. 2) The viva-voce test for defending one's thesis should be replaced with a comprehensive online test conducted by external experts. 3) Neither the research guides nor the university's examination committee should provide the examiners' list to evaluate the thesis. A discipline-wise database of examiners should be built through inter-university consortiums, and examiners could be selected at random from this database. 4) Job appointments and promotions should be executed through proper policy and should be de-linked from overemphasising research achievements. 5) Plagiarism detection software should be fine-tuned to detect paraphrasing and translation from other languages. The free availability of anti-plagiarism software can curb plagiarism. 6) A worldwide database of all papers with keywords in English and primary languages should be built. 7) There should be a practical-oriented curriculum that emphasises creativity by replacing theory-based rote learning. 8) Social strictures, moral suasion, awareness and training programmes should be in place, as well as specialised research writing workshops. 9) Rules about plagiarism should be documented in clear and straightforward language. 10) Strict regulations and penalties are very much needed. 11) Research guides and advisors need to be sensitised and held accountable.

Limitations and future scope of the study

Firstly, the study used the Harris scale, which was developed and tested in the US environment. The scientific rigour and contribution of studies of this kind could be more robust if a new scale were developed and tested for the Indian environment. The newly developed scale would help to advance the knowledge of research literacy and academic integrity in higher education. Secondly, the study's sample size was 105, which is just enough to conduct an analysis (95% confidence level with a margin of error of 10%). The authors feel there is a need to conduct a further study with a bigger sample size. In future studies, we therefore plan to have a bigger sample size (more than 384 participants), which would yield more robust study results (95% confidence level and a margin of error of 5%). Thirdly, the survey questionnaire was sent to almost 950 doctoral students via email in Google Forms, but only 105 responses (response rate: 11%) were received. There could be many reasons for the relatively low response rate. For instance, the email addresses were collected from the university website and it was not known whether they were still valid or active. Almost 200 emails were received regarding 'message delivery failure' or 'message block notification.' It is therefore possible that email servers identified our message as spam. Therefore, better ways to contact doctoral students need to be explored.

Conclusions

Plagiarism is widespread in India. Although some stringent guidelines issued by the University Grant Commission Government of India are in place to minimise the incidence of plagiarism, awareness of plagiarism among doctoral students in India is not encouraging. Moreover, there is a need to address the underlying causes of plagiarism before implementing the guidelines issued by the University Grant Commission Government of India. In order to address the underlying causes of plagiarism, the present study suggests an action plan including: 1) establishing a research ethics committee at all academic or research institutions, 2) conducting training, workshops and awareness campaigns in the early stage of doctoral students' studies to ensure that they understand plagiarism and its implications correctly; 3) ensuring clarity of research purpose among doctoral students and emphasising the quality of research work in the initial training days, 4) developing academic writing skills, and 5) providing anti-plagiarism software free of cost to all students and faculty members.

The findings and the suggested action plan of this study would be helpful to doctoral students, guides and policymakers involved in addressing the plagiarism issue. The present study has limitations concerning the sample size and the scale used to measure plagiarism. Future studies can be conducted by developing a plagiarism scale for the Indian environment, testing with a bigger sample size, and comparing results with other studies in India or abroad. In future research, we would like to explore these research possibilities.

References

Badrinath, H., & Prakash, I. (2016). *Academic integrity and plagiarism: A case study,* 3rd National Conference on Electronic Theses & Dissertations Gandhi Nagar, India.

Chaddah, P. (2014). Pursuing knowledge creation, India needs a policy on 'plagiarism cells'. *Current Science*, *106*, 349.

Dhammi, I. K., & Ul Haq, R. (2016). What is plagiarism and how to avoid it? *Indian Journal of Orthopaedics*, *50*(6), 581–583. https://doi.org/10.4103/0019-5413.193485

Đurišić, M., & Bunijevac, M. (2017). Parental involvement as an important factor for successful education. *Center for Educational Policy Studies Journal*, *7*(3), 137–153.

Ehrich, J., Howard, S. J., Mu, C., & Bokosmaty, S. (2016). A comparison of Chinese and Australian university students' attitudes towards plagiarism. *Studies in Higher Education*, *41*(2), 231–246.

Farooq, R., & Sultana, A. (2022). Measuring students' attitudes toward plagiarism. *Ethics & Behavior*, *32*(3), 210–224. https://doi.org/10.1080/10508422.2020.1860766

Frandsen, T. F. (2019). Why do researchers decide to publish in questionable journals? A review of

the literature. *Learned Publishing*, *32*(1), 57–62.

Garanayak, S., & Ramaiah, C. K. (2019). Predatory journals publishing trend in India: A study. *University News*, *57*(38), 11–18.

Gopinath, N. M., John, J., Senthilkumar, E., & Nagappan, N. (2014). Knowledge awareness and attitude about research ethics among dental faculties in India. *The Journal of Contemporary Dental Practice*, *15*(5), 608–613. https://doi.org/10.5005/jp-journals-10024-1587

Gradišek, P. (2012). Character strengths and life satisfaction of Slovenian in-service and pre-service teachers. *Center for Educational Policy Studies Journal*, *2*(3), 167–180.

Handa, N., & Power, C. (2005). Land and discover! A case study investigating the cultural context of plagiarism. *Journal of University Teaching Learning Practice*, *2*(3), 8.

Harris, R. (2001). *The plagiarism handbook: Strategies for preventing, detecting, dealing with plagiarism*. Pyrczak Publishing.

Hegde, A., & Patil, N. (2021). Predatory publishing in India: Has the system failed us? *Acta Neurochirurgica*, *163*(1), 9–10.

Iftikhar, F. (2022, May 26). UGC considers scrapping rule on publishing research for PhD. *The Hindustan Times*. https://www.hindustantimes.com/india-news/ugc-considers-scrapping-rule-on-publishing-research-for-phd-101653503189014.html

Javaid, S. T., Sultan, S., & Ehrich, J. F. (2021). Contrasting first and final year undergraduate students' plagiarism perceptions to investigate anti-plagiarism measures. *Journal of Applied Research in Higher Education*, *13*(2), 561–576. https://doi.org/10.1108/JARHE-04-2020-0080

Kadam, D. (2018). Academic integrity and plagiarism: The new regulations in India. *Indian Journal of Plastic Surgery*, *51*(2), 109–110. https://doi.org/10.4103/ijps.IJPS_208_18

Kanchan, T., Menezes, R. G., & Kalthur, S. G. (2010). "Unintentional" self-plagiarism. The *American Journal of Forensic Medicine and Pathology*, *31*(4), e10. https://doi.org/10.1097/PAF.0b013e3181ff6225

Kent, C. K., & Salim, N. (2010, September 28–30). *Web based cross language plagiarism detection*. Second International Conference on Computational Intelligence, Modelling and Simulation, Bali, Indonesia.

Khairnar, M. R., Wadgave, U., Shah, S. J., Shah, S., Jain, V. M., & Kumbhar, S. (2019). Survey on attitude of dental professionals about plagiarism in Maharashtra, India. *Perspectives in clinical research*, *10*(1), 9–14. https://doi.org/10.4103/picr.PICR_141_17

Kumari, M. P., & Lakshmi, S. (2015). Awareness on plagiarism among research scholars of Sri Venkateswara University: A study. *IOSR Journal of Humanities and Social Science*, *20*(3), 55–59.

Kumari, R., Langer, B., Singh, P., Kumar Gupta, R. K., Sharma, P., & Gupta, R. (2018). Exploring attitude toward research and plagiarism among faculty members and senior residents in a medical school of North India: A cross-sectional study. *International Journal of Medical Science and Public Health*, *7*(4), 255–260.

Lahiry, S., & Sinha, R. (2019). Creativity is intelligence having fun, originality an undetected plagiarism! *Indian Journal of Dermatology, Venereology and Leprology*, *85*(4), 436–438.

Ma, H. J., Wan, G., & Lu, E. Y. (2008). Digital cheating and plagiarism in schools. *Theory Into*

Practice, 47(3), 197–203. https://doi.org/10.1080/00405840802153809

Mavrinac, M., Brumini, G., Bilić-Zulle, L., & Petrovecki, M. (2010). Construction and validation of attitudes toward plagiarism questionnaire. *Croatian Medical Journal, 51*(3), 195–201. https://doi.org/10.3325/cmj.2010.51.195

Mills, D., & Inouye, K. (2021). Problematizing 'predatory publishing': A systematic review of factors shaping publishing motives, decisions, and experiences. *Learned Publishing, 34*(2), 89–104.

Misra, D. P., Ravindran, V., & Agarwal, V. (2017). Plagiarism: Software-based detection and the importance of (human) hardware. *Indian Journal of Rheumatology, 12*(4). https://journals.lww.com/ijru/Fulltext/2017/12040/Plagiarism_Software_based_Detection_and_the.2.aspx

Mondal, S., & Mondal, H. (2018). Google search: A simple and free tool to detect plagiarism. *Indian Journal of Vascular Endovascular Surgery, 5*(4), 270.

Mukherjee, I., Kumar, B., Singh, S., & Sharma, K. (2018). Plagiarism detection based on semantic analysis. *International Journal of Knowledge and Learning, 12*(3), 242-254.

Mustofa, K., & Sir, Y. A. (2013). *Early-detection system for cross-language (translated) plagiarism*. In Information and Communication Technology: International Conference, ICT-EurAsia 2013, Yogyakarta, Indonesia.

Naik, R. R., Landge, M. B., & Mahender, C. N. (2015). A review on plagiarism detection tools. *International Journal of Computer Applications, 125*(11).

Padmanabhan, S. (2017). Self-plagiarism-self goal. *Journal of Indian Orthodontic Society, 51*(3), 145–146.

Pallela & Talari (2016, October 20–22). *Plagiarism: a serious ethical issue for Indian students*. IEEE International Symposium on Technology and Society (ISTAS), Kollam, India.

Pandita, R., & Singh, S. (2019). Regulations to prevent plagiarism in higher education in India: A critical appraisal. *DESIDOC Journal of Library and Information Technology, 39*(2).

Parikh, T. (2021). Begin from the beginning: The need for reimagining and retelling myths in children's books. *International Journal of Humanities, Art and Social Studies, 3*(1), 1–8. https://flyccs.com/jounals/IJHASS/paper/Ijhas.vol8.pdf

Pathak, N. N. & Malakar, K. (2016). *Use of anti plagiarism software for detection of plagiarism in research work in the North East Region with special reference to Gauhati University*. 10th Convention PLANNER-2016, North-Eastern Hill University Shillong, Meghalaya.

Patwardhan, B. (2019a). India strikes back against predatory journals. *Nature, 571*(7). https://doi.org/https://doi.org/10.1038/d41586-019-02023-7

Patwardhan, B. (2019b). Why India is striking back against predatory journals. *Nature, 571*(7763), 7–8.

Patwardhan, B., & Nagarkar, S. (2021). The UGC-CARE initiative: Indian academia's quest for research and publishing integrity. *First Monday, 26*(10).

Patwardhan, B., & Thakur, A. (2019). UGC-CARE initiative to promote research quality, integrity and publication ethics. *Current Science, 117*(6), 918–919.

Pradhan, B., & Pradhan, A. (2017). Dealing with plagiarism in scholarly communication.

International Journal of Library and Information Studies, *7*(3), 67–73.

Prasad, R. (2019, July 13). 127 papers from India retracted for image duplication, manipulation. *The Hindu*. https://www.thehindu.com/sci-tech/science/127-papers-from-india-retracted-for-image-duplication-manipulation/article61596015.ece.

Priyadarshini, S. (2018). India targets universities in predatory-journal crackdown. *Nature*, *560*(7719), 537-539.

Pushkar (2015, June 5). In India, you can plagiarize and flourish. *The Wire*. https://thewire.in/education/in-india-you-can-plagiarize-and-flourish

Pushkar (2018, September 6). UGC's anti-plagiarism rules don't make room for realities of Indian academia. *The Wire*. https://thewire.in/education/in-india-you-can-plagiarize-and-flourish

Rao, K. R. (2008). Plagiarism, a scourge. *Current Science*, *94*(5), 581–586. http://www.jstor.org/stable/24100297

Šorgo, A., & Heric, J. (2020). Motivational and demotivational factors affecting a teacher's decision on whether to do research. *Center for Educational Policy Studies Journal*, *10*(3), 77–97.

Šorgo, A., Vavdi, M., Cigler, U., & Kralj, M. (2015). Opportunity makes the cheater: High school students and academic dishonesty. *Center for Educational Policy Studies Journal*, *5*(4), 67–87.

Sharma, B. B., & Singh, V. (2011). Ethics in writing: Learning to stay away from plagiarism and scientific misconduct. *Lung India*, *28*(2).

Steen, R. G. (2011). Retractions in the scientific literature: Is the incidence of research fraud increasing? *Journal of Medical Ethics*, *37*(4), 249. https://doi.org/10.1136/jme.2010.040923

Sureda-Negre, J., Calvo-Sastre, A., & Comas-Forgas, R. (2022). Predatory journals and publishers: Characteristics and impact of academic spam to researchers in educational sciences. *Learned Publishing*.

Thakur, S., & Lahiry, S. (2019). Research ethics in the modern era. *Indian Journal of Dermatology, Venereology, Leprology*, *85*(4), 351.

Thomas, S. P. (2020). No laughing matter: Proliferation of predatory journals. *Issues in Mental Health Nursing*, *41*(4), 269-270. https://doi.org/10.1080/01612840.2020.1720448

Tlitova, A., Toschev, A., Talanov, M., & Kurnosov, V. (2020). Meta-analysis of cross-language plagiarism and self-plagiarism detection methods for Russian-English language pair [Systematic Review]. *Frontiers in Computer Science*, *2*(42). https://doi.org/10.3389/fcomp.2020.523053

Varghese, J., & Jacob, M. (2015). Do medical students require education on issues related to plagiarism? *Indian Journal of Medical Ethics*, *12*(2), 82-87. https://doi.org/10.20529/ijme.2015.026

APPENDIX-1

PART 1	
Descriptive Questions	**Options**
1. Gender	Male Female
2. Age	Up to 25 26–30 31–35 36–40 Above 40
3. Educational Qualification	MA MSc MCom MBA MTech MPhil PhD Other
4. Employment status	Employed Unemployed
5. Research experience	< 1 year 1–2 years 3–4 years 5–6 years > 6 years NA
6. Research publication	NIL 1–2 papers 3–5 papers 6–10 papers 11–20 papers > 20 papers
7. Publication in the peer-reviewed journal	Yes No
8. Research ethics course before doctoral registration	Yes No Not Sure
9. Presence of a research ethics committee at the institution of the respondents	Yes No Not Sure
Prescriptive Question	
10. Educational level to which research ethics need to be taught	High School Intermediate Undergraduate Postgraduate MPhil PhD

PART 2				
11. Statements	Strongly Disagree (SD)	Disagree (DA)	Not Sure (NS)	Agree (AG)	Strongly Agree (SA)
i. Sometimes I feel tempted to plagiarise because so many other students are doing it.	○	○	○	○	○
ii. I believe I know accurately what constitutes plagiarism and what does not.	○	○	○	○	○
iii. Plagiarism is as bad as stealing the final exam ahead of time and memorizing the answers.	○	○	○	○	○
iv. If my roommate gives me permission to use his or her paper for one of my classes, I do not think there is anything wrong with doing that.	○	○	○	○	○
v. Plagiarism is justified if the professor assigns too much work to the course.	○	○	○	○	○
vi. Punishment for plagiarism in college should be light because students are young people just learning the ropes.	○	○	○	○	○
vii. If a student buys or downloads a free whole research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university.	○	○	○	○	○
viii. Plagiarism is against my ethical values.	○	○	○	○	○
ix. Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal.	○	○	○	○	○
x. It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarize yourself.	○	○	○	○	○
xi. If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished also.	○	○	○	○	○
xii. If students caught plagiarizing received a special grade for cheating (such as XF) on their permanent transcript, that policy would deter many from plagiarizing.	○	○	○	○	○

PART 3

Question 12: Please offer your suggestions for improving research ethics, including curbing plagiarism in your field of study.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Biographical note

Tapan Kumar Pradhan, PhD, is a researcher at the School of Rural Management, XIM University, Odisha, India. His research interests include financial inclusion, rural development, natural resource economics, communal harmony, indigenous literature, and empowerment of people at the grassroots level. He has authored several books on rural society, tribal culture and comparative religion.

Ajit Kumar, PhD, is an Associate Professor of Information Systems at the Xavier Institute of Management, XIM University, India. He teaches courses like Digital Strategy, Digital Transformation of Business, Business Transformation using Artificial Intelligence, and Design Thinking for Managers. His research interests include innovations in pedagogy, design thinking, and health informatics.