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ORIGINAL PAPER

In Their Own Words: Research Misconduct from the Perspective of Researchers in Malaysian Universities

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Abstract Published data and studies on research misconduct, which focuses on researchers in Malaysia, is still lacking, therefore, we decided that this was an area for investigation. This study provides qualitative results for the examined issues through series of in-depth interviews with 21 researchers and lecturers in various universities in Malaysia. The aims of this study were to investigate the researchers' opinions and perceptions regarding what they considered to be research misconduct, their experience with such misconduct, and the factors that contribute to research misconduct. Our findings suggest that the most common research misconducts that are currently being witnessed in Malaysian universities are plagiarism and authorship disputes, however, researchers seldom report incidents of research misconduct because it takes too much time, effort and work to report them, and some are just afraid of repercussions when they do report it. This suggests possible loopholes in the monitoring system, which may allow some researchers to bypass it and engage in misconduct. This study also highlights the structural and individual factors as the most influential factors when it comes to research misconduct besides organizational, situational and cultural factors. Finally, this study highlights the concerns of all participants regarding the 'publish or perish' pressure that they believe would lead to a hostile working environment, thus enhancing research misconduct, as researchers tend to think about their own performance rather than that of whole team or faculty. Consequently this weakens the interpersonal relationships among researchers, which may compromise the teaching and supervision of junior researchers and research students.

Keywords Research misconduct · Research ethics · Research integrity · Responsible research conduct

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Introduction

Research Misconduct

Research misconduct is a breach of ethics that spans a broad range of offenses, from deliberate data fabrication, or falsification, to plagiarism (Stern et al. 2014). The Office of Research Integrity (ORI) of the United States defined research misconduct as: 'fabrication, falsification or plagiarism in proposing, performing, or reviewing research, or in reporting research results' (Okonta and Rossouw 2013). 'Fabrication is making up data or results and recording or reporting them. Falsification is manipulating research materials, equipment or processes, changing or omitting data or results such that the research is not accurately represented in the research record. Plagiarism is the appropriation of another person's idea, processes, results, or words without giving appropriate credit. Research misconduct does not include honest error or differences of opinion' (OSTP 2000). In addition, the National Science Foundation (NSF) of the United States of America included 'other serious deviations from accepted practice' in the existing definition of research misconduct, to include acts, such as intentional protocol violations, dropping outliers from a data set and falsification of a bio sketch or resume (Broome et al. 2005).

According to Amin et al. (2012), research misconduct can occur at every stage of the research process, either during proposal preparation, in the methodology, during the process of data collection, data analysis, data reporting, presentation of the research findings, or even during the publication of the research report by seeking duplicate publication and/or providing gift authorship, and omitting researchers deserve to be in the authorship by line (Jones 2002). Research misconduct is an insidious problem in the scientific community today because it has the capacity to harm not only science and scientists, but also society. Despite the various policies, guidelines and regulations, which have been put in place to monitor and avoid research misconduct, cases of misconduct continue to plague academic science. History records many examples of fraudulent scientists, and year after year more cases of research misconduct have been highlighted (Angier 1990; Basu 2006, p. 493; Marris 2006; Park 2008; Schulz 2008; Kakuk 2009; Dominus 2011; Wise 2011; Kraut 2011). The frequency with which scientists fabricate and falsify data, or commit other forms of scientific misconduct, is a matter of some controversy (Fanelli 2009). Actually, the frequency of occurrences of research misconduct is indeterminate because most institutions do not reveal cases of misconduct, which have happened within them (Anderson et al. 2013; Smith 2006). This is usually done to protect the reputation of the institution if the case is made known to the public. Difference approaches have been employed to measure the frequency of misconduct, and they have produced a corresponding variety of estimates. According to Steneck (2006), based on the confirmed cases in the USA, fraud is documented in about 1 in every 100,000 scientists, whereby papers retracted from the PubMed library due to misconduct have a frequency of 0.02% (Claxton 2005a, b). Meanwhile eight out of 800 papers submitted to the Journal of Cell Biology showed that the digital images had been improperly manipulated (Steneck

2006) and a routine audit conducted by the US Food and Drug Administration (FDA) between 1977 and 1990 found deficiencies and flaws in 10–20% of studies, which led to 2% of clinical investigators being judged guilty of serious scientific misconduct (Glick 1992). With the continuous occurrence of several high profile cases, such as the Hwang cases (Steen et al. 2013), and the creation of a website to track retracted research (Oransky and Marcus 2014), this is evidence of a growing interest in issues related to research misconduct. The occurrence of several cases of research misconduct has also given rise to concern that misconduct may be having a detrimental effect on the credibility of researchers and the reliability of the scientific literature (Jha 2012). Therefore, this raises the need for researchers to be aware of it and to acknowledge that it does happen (and is still happening) and to find a way to address the issues.

The factors that have lead some researchers to commit misconduct are varied, complex and poorly understood (Stern et al. 2014). One of the factors that can contribute to research misconduct is the individual's character. According to Resnik's Bad Apple Theory, individual character plays an important role in research misconduct (Resnik 2010). The theory explains that when an individual has low moral values and may have financial problems or psychological disturbance, then they are more prone to commit an act of misconduct. For example, in the case of Sloan Kettering, an immunology researcher, William Summerlin, admitted to fabricating data in skin transplant experiments. A committee that investigated the incident determined that Summerlin was suffering from mental health problems (Shamoo and Resnik 2009). Summerlin's case seems to fit the 'bad apple theory'. However, some scholars might disagree that an individual's character alone is sufficient to influence a person to engage in misconduct. According to Tindemans (2007), individual character alone is not to be blamed for a person's decision to engage in misconduct because the decisions, which a person makes that translate into their actions, are always influenced by various external factors. This is supported by Casadevall and Fang (2012), who argued that the current pressure for researchers to multiply their publication records as proof of their credibility, and the winner-take-all economics of research, might also contribute to more research misconduct. So far the actual causes of misconduct have not been determined but there are analyses that suggest that there are psychological and environmental factors, which are associated with misconduct (Anderson et al. 2013). Based on previous studies, causal factors for research misconduct can be divided into five groups: individual, organizational, situational, structural and cultural (Resnik 2010; Davis et al. 2007) however, it is unclear how these factors contribute to actual cases of research misconduct (Pryor et al. 2007).

According to Smith (2006), institutions would prefer to deal with cases of misconduct internally in order to keep the reputation and credibility of the institution as a research centre from being scrutinized and tarnished by members of the research community and society in general. However, when misconduct is detected by other academics from other countries, possibly through submission of research reports during publication, the responses to the misconduct sometimes become public knowledge. In 2016, the Faculty of Medicine at the University of Malaya was alerted to alleged academic misconduct on the part of some faculty

members who were authors or co-authors of a number of scientific publications (The Star Online 2016). This specific case of academic fraud was discovered, not by an internal probe within the university, but by academics and researchers from outside the country when they became reviewers of that particular publication. Incidents of research misconduct such as this are disconcerting and make us ask the question "Why do researchers engage in research misconduct? Are they not aware that their actions are considered as misconduct in conducting research? Or do they think that they can bypass the system and get away with doing it?"

Previous studies on research misconduct using quantitative or/and qualitative methods, have included biomedical trainees, medical investigators, medical consultants, published authors of pharmaceutical trials and research coordinators, post-graduate students, as well as the faculty members (Kalichman and Friedman 1992; Jacobsen and Hals 1995; Geggie 2001; Gardner et al. 2005; De Vries et al. 2006; Pryor et al. 2007; Langlais 2006; Martison et al. 2005; Kakuk 2009; Nilstun et al. 2010; Arda 2012; Joseph et al. 2014; Krstic 2014; Lei and Hu 2014). Recognizing the importance of research and development (R&D) as a catalyst for technological growth and economic development in modern societies, research institutes and institutes of higher learning in Malaysia have taken great interest in issues related to research misconduct. There are few publications on research misconduct in Malaysia, but those that exist mainly focus on plagiarism among undergraduate students in Malaysian higher learning institutions (Smith et al. 2007; Karim et al. 2009; Chun et al. 2012; Wan et al. 2011; Yusof and Masrom 2012; Ali et al. 2012; Bakhtiyari et al. 2014; Looi et al. 2015) to name a few. These studies showed that, although students do have a basic understanding of plagiarism, it can be categorised as rather weak (Yusof and Masrom 2012), and several factors, such as lack of awareness, understanding, competence and personal attitudes were highlighted as factors that contribute to plagiarism (Smith et al. 2007). There is no evidence to suggest that pressure and the availability of Internet facilities has increased the incidence of plagiarism. Based on these studies, the findings showed that an understanding of plagiarism, in particular, and research misconduct, in general, is still relatively weak among Malaysian students. This lead to the development of this study, which was to investigate researchers in the academic community regarding their perceptions of research misconduct through in-depth interviews. However, because to our knowledge, qualitative studies on research misconduct among researchers in the academic community has not been done previously, the results from this study will be a valuable contribution to the existing literature on research misconduct. To date, plagiarism has been the most documented area of research misconduct in this country while the other types of research misconduct have not been covered so thoroughly.

Due to this gap in the literature, we found that this research is timely. Additionally, in order to adequately prevent and address the topic of research misconduct, the factors that influence its occurrence must be better understood, and the best way to gain this information is through individuals in the research community. With years of experience in conducting research, supervising the work of their research students and collaboration with other research institutes around the world, the researchers' perceptions of research misconduct constitute valuable

knowledge and represent the closest opportunity we can get to uncover the reasons why researchers might engage in research misconduct. Therefore, the purpose of this study is to: (1) examine various types of behaviour or actions that are considered to be types of research misconduct; (2) reduce the gaps in knowledge resulting from the lack of relevant data and analysis on the subject; (3) highlight issues on misconduct that have rarely been addressed or taken seriously and (4) serve as a starting point for new, focused, large-scale research, which would ultimately lead to the development of suitable training programs and strategic thinking at institutional, national or regional levels.

Methods and Materials

In-depth interviews, using semi-structured questionnaires, were adopted for this study. The design of the questionnaires was guided by a previous review of the literature on plagiarism (Devlin and Gray 2007), but it was modified accordingly, based on previous research on issues related to research misconduct and they were pilot tested. However, during the pilot test some pertinent questions did surface and these questions were then incorporated into the new set of interview questions as deemed appropriate. The interviewer's questionnaires, which were prepared in English, included the following questions:

1. What are the actions or behaviour that you would consider to be misconduct in research?
2. Have you ever experienced or witnessed any misconduct and what was your reaction?
3. How prevalent is misconduct in your field and what is the most common type of research misconduct that you witness in your field of research?
4. What are the possible factors that contribute to research misconduct?
5. How good is your institution in monitoring misconduct?
6. Do you think that cultural factors influence a researcher's decision to engage in misconduct?

The answers to these interview questions would indicate the participants' understanding of research misconduct, including the behaviour that they would consider as misconduct, whether they were aware of what they should do when witnessing misconduct, the level of research misconduct prevalence in their research area and what were the common types of misconduct within their research field, their knowledge on the available monitoring systems for misconduct in their institution, their opinion on factors that might contribute to misconduct and the roles of culture in misconduct. It also could highlight some types of misconduct that have rarely been given attention by researchers in the academic community. The interviews lasted between 45 min and 2.5 h and were conducted using either English or Malay languages depending on which language the participants were more comfortable using.

The interviews were conducted on a voluntary basis and informed consent was given. The participants were selected based on their experience in research fields, in terms of conducting research and supervising research by students or fellow researchers. A set of the interview questionnaires, together with the informed consent forms and a brief description of the research objectives were sent by email to the selected participants. When they agreed to be one of the participants, the date, time and venue were decided, based on the participant's availability. Overall, the participants consisted of 21 researchers, who were from different research disciplines, geographical areas, career levels and had experienced differing numbers of years in conducting and supervising research. There were nine male and twelve female participants, six of the participants were junior researchers with less than 10 years' experience in research and 15 were senior researchers with more than 25 years of research experience. Nine were from the field of social sciences and humanities, while 12 were from the field of natural sciences.

The interviews were recorded and handwritten notes were also taken during, or at the end of, each interview. All of the interviews were transcribed and the data was analysed to determine common patterns of issues highlighted by the participants. The analysis was conducted with another researcher to compare and define the major findings to test their validity. No new data or information emerged during the final interviews, indicating that data saturation had been achieved. It is important to note that the opinions expressed by the participants involved in the study cannot be generalized to the entire research community in Malaysia. The interview questions were designed in such a way as to illuminate the issues which would be important from the perspective of the researchers and not to investigate the possible existence, or level of research misconduct, in their institution.

Research Results

The results from this study showed that participant opinions on research misconduct differed according to their field of research. For example, participants from the social sciences hardly mentioned research misconduct in terms of data fabrication and falsification; instead they frequently discussed topics regarding plagiarism and authorship misconduct, whereas participants from the natural sciences discussed misconduct from the aspect of data manipulation, rather than plagiarism or authorship. This indicated that researchers from different fields might focus on different types of research misconduct due to the nature of their research. Our findings also showed that most of the participants had witnessed or experienced at least one type of research misconduct in their years of working as a researcher. This study also showed that most universities in Malaysia do have mechanisms in place to monitor research misconduct, however, the efficiency of these mechanisms and whether researchers are aware of them, is still questionable. This is because, based on the opinion of the participants, incidents of misconduct are still occurring, despite the implementation of regulations and policies on research misconduct. We categorized our findings into six major themes, which are presented below.

Research Misconduct

When asked how they defined research misconduct, the participants provided various definitions of what they believe was research misconduct from data manipulation to mistreatment of research subjects. However, despite the differences, the participants' opinions of misconduct were mainly focused on the failure of the researcher to adhere to the research protocol and conduct their research ethically.

One participant preferred to use the term 'dishonesty' when defining research misconduct:

> When you are dishonest with your data, dishonest with your source of data, dishonest when interpreting the data according to what you want, that to me is research misconduct. (P2)

One participant stood out when describing his thoughts on research misconduct. His descriptions of research misconduct indicated that, despite being a scientist and educator, first and foremost he was a person with religious conviction and he upheld this belief in his personal, as well as, professional life:

> Research misconduct is when one does not conform to four components of behaviour. They go against the notion of sincerity (amanah). They are not wise (futanah) when dealing with others who make mistakes. They do not provide the right information and they do not have the sense of wanting to make people clever (tablia'ah). Therefore, when researchers do not conform to theses four components of behaviour, I consider that they are already committing misconduct. It does not have to be something that is written on paper or misbehaviour that you could charge or investigate in a human court of law. When someone goes against the notion of sincerity, he is already not sincere to himself, let alone to other people. (P7)

Prevalence of Misconduct

When asked about the prevalence of research misconduct in their institution, most participants confessed that currently, it is quite common, particularly among the students. Our study also found that the most common research misconduct witnessed by the participants in their institution was related to publication, namely, plagiarism and authorship disputes. This is one of the highlights in this study because, despite the strict monitoring, the establishment of policies related to misconduct and the implementation of regulations and penalties for individuals engaging in research misconduct, cases of fellow researchers or students engaging in research misconduct, is still a common scenario in institutions of higher learning in Malaysia. Our study also highlighted the case that plagiarism and authorship disputes are a more common problem among researchers and students, particularly now that publication records are given a priority compared to other qualifications.

Plagiarism

Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. Based on the interviews, plagiarism was observed among both junior and senior researchers, albeit they gave different reasons why:

> If you ask me, plagiarism is most prevalent in which group, the junior or senior research? I won't be able to answer that because I previously witnessed both junior and senior researchers who have plagiarized work, although the reasons to plagiarize might differ. The senior one is probably because last time there was no requirement for publication. So when suddenly publication is a necessity, especially for career development, some tend to plagiarize. As for the young researcher, it is probably due to their lack of knowledge on how to do referencing or citing other authors' works, so they think that by just naming the source without paraphrasing, it is ok. (P17)

One participant mentioned that plagiarism is quite common in her field, particularly during the write-up stage. It is not so much on the data or findings or results because that person needs to have exhaustive knowledge in statistics to do so.

> As lecturer, I also supervise student's projects. When you work with that particular student for some times, you get to know their capability when it comes to writing. I have seen quite a number of my students plagiarize. You know what their English level is and, suddenly, you see their work is so extra-ordinary, so that is when I start to be suspicious. Normally, when I confront them, they do admit that they have plagiarized and this is quite common you know here. (P18)

Another participant stated:

> The most common type of misconduct in my field is in writing, of course, that involves plagiarism and authorship because in the field of philosophy, they use a lot of thinking or thought and this is hard to prove the originality. So normally we will be based on writing. Of course, for those who are not in the circle will not know whether the idea is new or old, original or taken from another's thoughts, but we know." (P8)

Authorship

Authorship disputes include coercion authorship, admiration authorship, gift authorship, 'ghost writer', duplicate production authorships and issues related to the assignment or ordering of authorship. Our study found that misconduct related to authorship has become common nowadays, particularly when researchers in the academic community are being pressured to publish or face delays in their career advancement. The majority of the participants had experienced authorship disputes, either having been a victim themselves, or having witnessed it happening to fellow researchers.

> Authorship issues are quite common in my institution, especially now that the pressure is high to publish. It's like one day someone comes to you and asks to be named as one of the co-authors for a paper that they do not have any contribution to at all in. Sometimes, you are in a dilemma, you know, especially when the person who asks is someone who is in a higher position that you. (P1)

> I think authorship disputes are very common now. I'm not sure whether it's because of lack of knowledge regarding authorship or people simply being ignorant. I guess everyone is desperate for a good evaluation for his or her key performance index. I remember I had one experience related to authorship when I was a PhD student where my second supervisor named himself as the first author in a paper that I wrote and where he had a very minimal contribution to the write up. (P18)

However, one participant argued that research misconduct was not common in his field of study. He argued,

> It is not prevalent when you are proactively handling it. Humans must have ethics or 'akhlak' so they must know how to do it, what to refer to, which text to read, which book to read and, of course, when a person has a high level relationship with God, they will be aware of what is right and wrong. In my opinion, plagiarism in academia does not really happen because in academia, we are aware of the truth, unless that person is pseudo-academic. Meaning they have entered academia as a pretender. (P7)

Other Types of Misconduct

Our findings suggest that there are other types of misconduct that are sometimes overlooked by the institutions. Although they are not prevalent types of misconduct, mismanagement of funds, conducting research without proper clearance from the ethics committee, and misrepresentation of products, are the types of misconduct that need to be taken seriously before they give way to further damage to the research community.

> It is not common, but mismanagement of funds does occur as we speak. It might not be that serious but a misconduct is a misconduct right? The research grant is not spent in accordance to what it is supposed to be used for. For example, the researcher chooses to get his/her supplies from suppliers that are not stated by the university just because they are related to each other, or grants are used to attend irrelevant conferences that do not have an impact on the research, or grants are not distributed evenly among members of the research team. It's not so common nowadays but it is still happening. (P10)

Action Taken After Witnessing Misconduct

One of the important findings in our study is that when participants had experienced or witnessed misconduct they had seldom come forward and reported the incident to

the responsible authority. This indicates that most misconduct that has happened in the institution goes unreported; therefore, the exact number of cases of misconduct is unknown. Based on our interviews, we found that some researchers prefer to keep quiet rather than taking any action or reporting the misconduct. Our findings indicate that they did not want to complain or report the misconduct because of the long and tedious processes that are involved in reporting misconduct.

> A group of researchers from my department found out that their proceeding paper was published in a conference that they did not attend, and the names of the authors were also changed. However, they decided not to report or complain because it would take so much time and there were so many works to do, emailing to and fro between the editor and whoever that are necessary. (P17)

However, we also found that some, for some participants were concerned that reporting misconduct in their research environments may negatively influence their Ph.D., careers or otherwise create problems for them.

> How could I have complained? At that time I felt so naive and scared. You know, you feel that your life is in their hands. If I complained against my own supervisor, I was worried that she would fail me. Then I won't get my PhD. So I just keep quiet. (P18)

Factors Contributing to Misconducts

Generally, research misconduct is when one acts in an opposite way to professional ethics. However, some have argued that, in reality, a person's actions are much influenced by other external factors. In this study, we found that there were several factors that lead a researcher to engage in research misconduct. These factors can be divided into five groups. They are: individual, situational, organizational, structural and cultural.

Individual Factors

First and foremost, we found that participants highlighted that individual factors were the most important factors that contributed to research misconduct. One of the most important findings in this study was that it highlighted individual factors as the most important and influencing factors, compared to the rest of the factors when it comes to research misconduct. While most participants agreed that organizational and structural factors played important roles in research misconduct, our findings suggest that it is the individual factors that determine the researcher's integrity when conducting research.

> Factors, such as work environment, can contribute to misconduct but at the end of the day, the individual's character is the most important factor that contributes to misconduct. (P11)

> I believe that when you as an individual have high moral values and integrity, no matter what situation you are in or what kind of problem you face, you will not engage in misconduct. (P4)

Situational Factor

Given different circumstances, ethical researchers could end up making unethical decisions. Having a limited time to finish the research, or not enough subjects, can influence the researcher to engage in misconduct in order to produce the results on time. This finding indicated that these situations do contribute to misconduct.

> He/she might have a personal financial problem and the institution is giving monetary incentives for the researchers who can publish papers, let's say in Q1 journal. The incentives are supposed to encourage researchers to publish but if someone is desperate, they could engage in misconduct. (P17)

Organizational Factors

Based on the interviews, we found that one of the most important factors that contribute to research misconduct are organizational factors, including a lack of communication among researchers, a lack of good mentoring between supervisors and subordinates and placing too much trust on team members. These factors indirectly create a non-conducive working environment for research and it can influence the way the researcher conducts their research. According to one participant,

> By right, we are a team and are working on the same research/project, we will have discussions between us from time to time, just to know what going on or what is the progress of each member regarding the task that was assigned to them. But in reality, to be honest, we hardly have time to meet up, particularly when you are not from the same universities. So we just based it on trust that you will do what you are supposed to do and do not 'cheat'. This happened to me and a few times where we needed to present our findings at one conference/seminar and we did not have time to meet up before that. So, on that day, we presented it and after we had presented it, one of the delegates came to us and told us that… "you know what, I think I have seen that data before". We were shocked and, of course, embarrassed. Then we found out that the person who was supposed to do the data collection did not actually compete the task. So you know, this thing happens when you do not have open and constant discussions among your research team and when you trust them too much. (P17)

One of the issues that was highlighted by one participant was the lack of communication between management and the faculty member, which in her opinion, can positively lead to research misconduct.

> Leaders of the organization need to speak what is right. Don't just say, we want… let's say, 10 publications a year. How you do it is up to you as long as you

> fulfil the 10 publications. This is not right. They need to tell them what kind of papers they want. Like, it must be related to your field…don't just ask them to partner with any researcher just to produce papers. You ask them to collaborate but you don't specifically say how and who to collaborate with. They say with anyone. This is why issues, such as plagiarism and authorship, happen because people just do it and produce. Who cares what it is. Who cares with whom it is done, as long as I produce something? The organization indirectly creates an environment of 'I don't care as long as you produce.' This is bad. (P5)

Structural Factors

We found that a majority of the participants highlighted structural factors, such as workload, competition and evaluation set contributed to a researcher's decision to engage in research misconduct. The participants particularly emphasized the 'publish or perish' pressure under which faculty researchers must operate. According to the participants, failing to publish a certain number of articles in a high impact journal, would jeopardise the researcher's position in the faculty and could affect their chances of securing research funding and dampen their chances of career advancement in the research field. One participant stated:

> Because of the evaluation set used to chase personal KPI depending so much on publication, I see that lecturers, nowadays, are becoming very cunning. They just want to focus on publication so they compromise on other aspects of lecturing. They compromise the quality of teaching and supervision just to fulfil the publication's requirement. They do not really supervise and take full responsibility for their supervisee. They just want the student to produce a paper and have their name as co-author. They don't even care whether the student comes and sees them, just as long as they write some paper for publication. So, there is a lack of relationship and this is bad in terms of mentoring and setting an example for the junior researcher. (P14)

> Publication records decide so many aspects of the researcher's career. It decides on the promotion, securing a research grant, incentives, job security, recognition and their credibility as researcher. It also creates competition among researchers because we are 'fighting' for research funds and nowadays, research funding is decided based on our publication records among other qualifications. (P4)

One participant added:

> People are desperate to achieve the required number of publications from the university because publications decide your career in research, and it is all connected. If the researcher does not have a publication, they won't get a research grant and without a research grant, they can't do research, which will limit their publications records. This eventually delays their promotion or confirmation for being a junior researcher, and causes loss rather than getting greater financial rewards. (P2)

Cultural Factors

Although it is still debatable, we found that few of our participants agreed that cultural differences influence the researchers' decision to engage in research misconduct. This is one of the important findings in our study where culture was highlighted as one of the contributors to research misconduct. Our findings also found that the culture that was mentioned by the participants was not only related to the way a person lives or is being brought up, but it also includes the cultures of academic, writing, gaining knowledge and research in the respective institutions. We found that this finding was an important contribution to the existing literature on research misconduct because, until today, cultural factors were still debatable when it comes to research misconduct.

> Yes, I agree that cultural factors do influence researchers to engage in misconduct. For example, if the institution always emphasizes on the ethical culture of conducting research, it creates awareness and improves knowledge about conducting research ethically and how important it is to do so. So, it is becoming a norm to do research ethically. However, if someone engages in misconduct and gets away with it, we are also creating a new culture, where the innocent get punished, while the guilty get away. (P16)

> Yes, cultural factors do influence an individual's decision to engage in misconduct. If you grew up in an environment that focussed on having integrity in whatever you do, you will practise it in your personal and professional life. And it is also reflected in how you conduct your research as researcher. You know what is right and wrong. (P6)

Penalties

The series of interviews with the participants indicated that they had heard of incidents where the researcher was caught committing research misconduct but they were not aware of the penalties imposed on them. This is because most of the participants were not involved in the investigation. However, it was agreed that the penalties would vary depending on the severity of the misconduct.

> I believe the penalties vary depending on the severity and the doer is allowed to provide an explanation of his/her action. The university also takes into consideration the person's service and contribution to the university while they have been working for the university. (17)

For P2, she believed that institutions should create continuous awareness programs where the supervisor should actively take part before talking about penalties:

> We should create an awareness program or seminar through printed brochures or online programs. The supervisor also needs to take responsibility and we need a centralized body to monitor complaints and misconduct. Then we can talk about penalties or else the system will punish the innocent. (P2)

Tendency to Engage in Misconduct

Our study found that there were two main views on this topic: participants who thought that junior researchers have more tendencies to engage in misconduct and those who thought that both junior and senior researchers have the tendency to engage in misconduct. For those who argued that junior researchers have more tendencies to engage in misconduct, they believed that it was due to their lack of experience and knowledge in conducting ethical research and that they needed to compete for job security.

> I think that a junior researcher has the tendency to engage in misconduct because they are ambitious and competition is very fierce, especially for getting a job. Furthermore, the younger generation do not take things seriously, for example, regarding procedure/protocols because they feel that it is a waste of time and very tedious. (P12)

Some participants thought that both junior and senior researchers were liable to engage in research misconduct.

> Both have a tendency to engage in misconduct. For a senior researcher, it may be because they have the authority over the junior researcher or research students so they might take advantage of their position. For junior researchers, it is mainly because of a lack of knowledge and experience and a lack of mentoring during their time as research students. (P15)

> For seniors it is probably because they have too much responsibility that they trust their subordinates to comply with research ethics when conducting the research. For junior researchers, it may be it due to wanting promotion, confirmation and increasing their publications. (P17)

Discussion

This paper has focused on exploring participants' perceptions on research misconduct from the perspective of researchers in Malaysian universities. Overall, our findings were that participants perceived misconduct in research as dishonest and not being true or not telling the truth regarding the process of conducting research, including withholding information that they knew would be useful to avoid harm or to bring benefit to other researchers or society. Our findings also indicated that, despite having regulations and policies on misconduct, some researchers still witnessed cases of misconduct among fellow researchers and research students. This study also suggests that there were various reasons given for researchers to engage in misconduct, which were influenced by various factors, including individual, organizational, situational and structural factors. Our findings support that of DuBios et al. (2013) who claimed that misconduct in research is complex in at least two important ways: firstly, misconduct in research takes many different forms and secondly, there are many reasons why a researcher might engage in research misconduct.

The participants in our study mentioned various types of behaviours, which they would consider as misconduct. These included: fabricated and falsified data to make sure their findings supported the hypothesis, plagiarism, authorship disputes, skipping the research the protocol in order to gain the desired results in a short time frame, recruiting participants using unethical methods or by coercion, mismanagement of the research grant and failure to get ethics committee clearance before conducting the research. Similar types of research misconduct were also mentioned in previous studies on research misconduct (De Vries et al. 2006; Okonta and Rossouw 2013; Kim and Park 2013; Rennie and Crosby 2001; Geggie 2001; Claxton 2005a, b; Lei and Hu 2014; Jordan and Gray 2012; Krstic 2014). This goes to show that the types of research misconduct do not differ much despite the differences in terms of demographic and research backgrounds. It also indicate that research misconduct is a growing problem for the research community in developed countries as much as it is in a developing nation, like Malaysia.

From our study, we found that there are currently two common types of research misconduct in Malaysian universities, namely authorship and plagiarism. Most participants had witnessed these types of misconducts from time to time and, they felt that now is the time to address it seriously. Authorship misconducts include gift authorship, coercion authorship, admiration authorship and allocation of authorship credit. These types of authorship disputes are similar to the ones mentioned by Okonta and Rossouw (2013) and Claxton (2005a, b). Based on our interviews with the participants, the main reason given to engage in authorship misconduct was due to the "publish or perish" pressure. Researchers feel pressure to increase their publication records in order to receive research funding, gain monetary rewards, and get a job promotion or to remain employed in the research institution. Similarly, the same issues of authorship were mentioned in Claxton (2005a, b), Epstein (1993) and Onwude et al. (1993), where they stated that it has currently become apparent due to the immense pressure from institutions to increase publication records as an evaluation method for the researchers' career and credibility. According to Biagioli et al. (1999), authorship is like a coin with the two sides being credit and responsibility and the practise of these complementary roles is often separated because of the human tendency to maximize one's credit while minimizing one's responsibility. However, Lawrence (2001) claimed that the common definitions of credit and responsibility do not always fit the reality of research practices; therefore, this creates an environment that breeds misconduct.

There were two types of plagiarism mentioned by the participants, intentional and unintentional acts of plagiarism. According to Howard (2000), the intentional act of plagiarism is simply a deliberate act of choosing to break the rules. However, unintentional plagiarism is described as the unintentional violations that occur when the student or researcher is exposed to a set of unfamiliar academic conventions, or is lacking in knowledge and skill for academic writing, including how to do citations, paraphrasing and referencing (Carroll 2004). Although our findings could not determine whether the act of plagiarism that was witnessed by the participants was either intentional or unintentional, it suggests that plagiarism is a common problem among researchers regardless if they are junior or senior researchers in Malaysian universities. There are several reasons why researchers engage in

plagiarism. When plagiarism was witnessed among senior researchers, the participants argued that the reason could be due to the non-existence of the culture of writing in the university where previously publishing paper was an option but not a necessity. However, many critics have argued about this reason because such a notion by no means implies support of cheating by allowing people to use culture as an excuse when claiming other people's words or ideas to be their own (Zobel and Hamilton 2002; Sowden 2005; Shi 2006).

Our findings show that some participants had first-hand experience with this form of misconduct and it was also highlighted that those who had witnessed misconduct seldom reported the case. Two of the reasons mentioned by the participants were that reporting misconduct would take too much time and effort and that the person engaged in misconduct would be considered superior to them. Issues of hierarchy and power were mentioned by Anderson et al. (2013), in which they explained why junior colleagues are hesitant to report suspected misbehaviour, particularly when the miscreant holds the keys to the other's career. Intervention was more likely if the potential accuser had authority over the doer. In an ideal situation, the whistle blower is supposed to be protected. However, in one particular incident of research misconduct mentioned by one participant in this study, the identity of the whistle blower was not only known by the committee, but also by those who were not on the committee. This shows that either the institution does not have a policy to protect the whistle blower or they failed to educate their faculty member on the importance of being protected from retaliation. According to Kornfeld (2012), institutional leaders must acknowledge the whistle blower's courage and their gratitude for the significant contributions that they have made to the scientific community and the institution's integrity. This is because, without the contribution of whistle blowers, total prevention of research misconduct is impossible as cases of misconduct will not be highlighted or known to the institution. Therefore, it is important to deal with the whistle blower's realistic fear of retaliation. The most effective protection for whistle blowers would be for them to remain anonymous (Price 1998). Fischbach and Gilbert (1995) argued that it is imperative for an institution to educate and provide experienced persons to initially receive a whistle blower's allegations, treat the information with privacy, and have the ability and authority to resolve the problem before a formal inquiry is made.

The reasons why a researcher engages in research misconduct that were highlighted by the participants in this study included: the roles of the institution in creating a conducive working environment for research (organizational), workload, competition and evaluation set (structural), an individual's personal characteristics (individual), plus situational and cultural factors. This information concurred with findings from previous studies on research misconduct (Hughes and Mc-Cabe 2006; Song-Turner 2008; Broome et al. 2005; Fanelli 2009; Davis et al. 2007). Our study found that, one of the most important factors that contributed to research misconduct was an individual's character and integrity. It was argued that, despite all the pressure posed on researchers, it is up to the individual's judgement to decide whether to go against professional ethics or not (Amin et al. 2012). Mental and emotional problems were also identified as factors that are responsible for a researcher's involvement in research misconduct (Davis and Riske 2002).

According to Dresser (1993), researchers who deviate from fundamental scientific norms with an awareness that they are doing so are deemed most responsible for their behaviour and thus most deserving of condemnation'.

Our findings showed that the structural factors, such as the researcher's workload, competitive working environment where research is conducted and evaluation is used by universities to evaluate a researcher's performance also contribute to research misconduct. This finding indirectly highlighted the roles of institutions or universities' management in enhancing the researcher to engage in misconduct. This concurred with previous studies by Amin et al. (2012) and Mumford and Helton (2002) where a competitive working environment, evaluation set that is used by the university to evaluate researchers' careers, and a heavy workload was the source of research misconduct among researchers. The leaders of the organization normally decided the research policies and objectives and these policies indirectly influence the evaluation set that will be used to evaluate the researchers' performance, which subsequently decides the future direction of the researcher's career in research. Currently, the quantity and quality of publications decides the research grant, promotion, job confirmation and security, greater financial reward, monetary incentives and recognition of the researcher. The 'publish or perish' pressure is creating competition between researchers particularly when its affects the researcher's chance of gaining the already limited research grant as well as limited number of top jobs. This could be the reason why some researchers duplicate their publications to have a better resume (Dhand 2002). However, it may not be a permanent cause as it is not an immutable pressure and it is possible to change. One of the suggestions for the institution is that they require their researchers to submit only their best publications for assessment, thereby placing emphasis on quality, rather than on quantity (Holaday and Yost 1995; Jefferson 1998).

The participants in this study also highlighted the case that, since the evaluation is primarily on an individual's performance, it creates an individualistic culture rather than a communal culture, whereby evaluation is on a group of individuals working as a team. Working in an environment that values individual over collaborative research also increased the likelihood of research misconduct over time (Louis et al. 1995). In addition, an individualistic culture might have a negative effect on interpersonal relationships among fellow researchers in the organization where it results in inadequate supervision and mentoring by inexperienced researchers, including graduate students (Hansen and Hansen 1995). The importance of a close interpersonal relationship between supervisor and supervisee was also highlighted by Morrison (1990) as it can create a platform for everyone to have an open discussion when facing problems or issues related to research, rather than keeping the problems secret and trying to solve them alone. An open discussion among fellow researchers encourages the researchers to have an interest in knowing what they are working on and to value the competition as a kind of motivation to do better. When researchers on the same team are not concerned with another researcher's work, it might lead to misconduct, as happened, for example, in the Gupta misconduct case (Dhand 2002). The participants also suggested that situational factors also contribute to research misconduct. It might not be a strong

influence but the literature on research misconduct offers numerous examples of situational challenges, which have been blamed for researchers' involvement in research misconduct (Davis 2003). However, negative and stressful situations have triggered rather temporary circumstances, which are thought to have prompted previously ethical persons to engage in unethical acts. For example, in the case of William Summerlin, who was one of the protagonists in one of the most notorious cases of scientific misconduct, claimed that he was suffering from emotional difficulties at the time of the incident (Smith 2006).

One of the findings that we would like to highlight in this study is the subject of religious conviction as a tool to prevent one from engaging in misconduct. Religious conviction was mentioned by a few participants in this study, as one of the ways to avoid in engaging in misconduct. Generally, they argued that lack of religious conviction in an individual could lead to bad decisions, which thus explained why some individual's might engage in misconduct. Some believe that religious beliefs could help a person to make right and ethical decisions in stressful situations. Religious belief was significantly and positively related to the strength of ethical standards (McNichols and Zimmerer 1985). However, only one participant really elaborated on the use of religious doctrine and beliefs, and used it to explain his response to the questions that were asked. This is an interesting finding as, in the literature, religious views are hardly mentioned when discussing research misconduct. This indicates the importance of religious beliefs for some participants, so much so that it helps them to make decisions regarding their actions, within or outside the research community. This finding also highlights the need to have further investigation on the correlation between religious beliefs and research misconduct in the future.

One unique contribution of this study is that it made use of the participant researchers' own professional experiences with research misconduct. This study provides an insight into what actually happens in the local research community that has seldom been highlighted. Our data provides an insight into the researchers' views and their understanding of research misconduct and what are the possible reasons for researchers to engage in misconduct. The findings from this study are important since, to our knowledge, it is the first qualitative study to be conducted on the issues of research misconduct in Malaysia, therefore, and the findings provide information that is not currently available elsewhere. Secondly, it shows that we are not immune to research misconduct because, clearly, from the interviews, research misconduct does occur from time to time, although the researchers have seldom reported it. Thirdly, the findings are important because they highlight the participants' opinions on the need for management to not only pay attention to serious types of research misconduct, such as fabrication and falsification of data and plagiarism, but also other types of misconduct, such as authorship disputes. This suggests that there is a need for universities' management to look into the current policies and monitoring of research misconduct because there could be some loopholes in the system as some researchers still manage to bypass the system and engage in misconduct.

The interviews also became a platform for active researchers to voice their concerns on the unrealistic expectations of institutions on the researchers and how

this could create more reasons to engage in misconduct. It should motivate researchers to compete healthily and strengthen their credibility as researchers, both locally and internationally. However, some researchers might use it as a platform to show off their capabilities (Amin et al. 2012). Our findings also suggest that awareness on how important it is to be ethical in research is still lacking among researchers and, alarmingly, among research students. Participants felt that implementing regulations or policies on misconduct is just a beginning. According to Anderson et al. (2013), implementing policies is much more than just distributing them throughout the university. The policies should be translated into concrete terms that are seen as meaningful for the daily actions of researchers.

Conclusion

Despite the policies, regulations and guidelines provided by the institution, research misconduct still occurs and this calls for serious attention. The global research system is vast and it can, and does, tolerate some level of error, inaccuracy and questionable practice. However, intentional misconduct and other behaviours that compromise the integrity of science is quite another matter. This can do great damage to the system by introducing falsehood and misrepresentation into a system that aims to seek the truth. The findings from this small-scale study suggest that it is crucial that all parties within the research community pay more attention to the issues and subjects connected to research ethics in order to increase research integrity among researchers. Particular attention should be given to research students or early career researchers who are just beginning to conduct their own research because we should nurture these young researchers to conduct research ethically from the beginning. These groups should be given the opportunity to raise their awareness, not only through ethics education, training, and programs, but also importantly, via good mentoring and supervision. Finally, more research related to research misconduct in the local research community is needed to provide evidence and encourage the development of suitable training programmes in response to the challenges associated with the internationalization of higher education.

Limitations of the Study

It was not the aim of this study to highlight the prevalence of research misconduct among researchers in Malaysian universities, nor to deny that research misconduct even exists. This study is limited in that it only involved interviews with a small number of researchers from selected universities; therefore, it cannot be generalized to the whole population of researchers in all the universities in Malaysia.

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