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Original Research

The Quality of Methodological Reporting of Cross-Sectional Articles Published in Iranian and Top Nursing and Midwifery Journals Indexed in the Scopus Database

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Abstract

Insufficient reporting of cross-sectional articles in scientific journals reduces the validity of the articles or makes them impossible to evaluate. It also reduces the number of citations of articles. This research aims to investigate the adherence of methodological section reports in Iranian nursing and midwifery journals (IRNMJ) to those in top international nursing and midwifery journals (INNMJ) indexed in the Scopus database and to compare the growth trend of methodological section reports in these two groups. A descriptive-analytical cross-sectional study was used. Using the STROBE statement in the methodology section, a 19-item instrument was prepared to collect information. 8 Iranian journals with 462 articles and 3 top Scopus journals with 334 articles were evaluated. The quality score of the methodological report of each article was calculated and analyzed using SPSS 19 software. The results of the study showed that the percentage of agreement with the STROBE statement was 72% in the IRNMJ and 80.25% in the INNMJ. In both groups of journals, some methodological reporting items, such as efforts to address potential sources of bias, had a low percentage of reporting, which has increased over time. From a scientific point of view, increasing the use of reporting guidelines can help to check the validity of the research and also increase the number of citations to the articles. Therefore, it is recommended that editors and reviewers of scientific journals in the field of nursing and midwifery place more emphasis on following reporting guidelines.

Keywords: Cross-Sectional Articles, STROBE Statement, Methodological Reporting, Nursing and Midwifery Journals, Iran.

Introduction

Reporting quality refers to the completeness, transparency, and adherence of study reports to established guidelines, ensuring reliability and reproducibility. In this study, methodological reporting is assessed based on compliance with the STROBE Statement, which facilitates clear and comprehensive presentation of observational research. This clarification enhances the understanding of our study's focus and contributes to improving research transparency."

The objective of this study is to examine the quality of reporting in cross-sectional articles, with a focus on addressing methodological transparency deficiencies. By emphasizing scientific reporting standards, this research seeks to provide actionable insights for researchers, enhancing the clarity and reliability of observational studies. Much health and care research, including the investigation of disease etiology, is conducted using observational studies (Alkhaqani, 2022). Although observational studies are not at the top of the scientific evidence pyramid, most knowledge is derived from this type of study (Shaghaghian & Astaneh, 2020). The results of observational studies can have many applications if they are well-designed and conducted. While observational studies encompass various designs, cross-sectional studies are particularly emphasized in this research due to their ability to provide a snapshot of variables at a specific point in time. This approach is valuable for identifying patterns and associations without requiring long-term follow-up.

Clear and transparent reporting is essential for ensuring the reproducibility and reliability of research findings. However, previous studies have highlighted inconsistencies in methodological reporting within cross-sectional research, which can impact the validity of conclusions. By addressing these gaps, this study aims to improve adherence to reporting guidelines and contribute to enhancing the overall quality of scientific communication.

As there is no effective registration system for cross-sectional study protocols, the only way to assess their quality is to review the reports of these studies. Insufficient reporting of cross-sectional studies is a global and long-term problem, whose serious consequences are not apparent to many researchers (Aghazadeh-Attari, Mobaraki, Ahmadzadeh, Mansorian & Mohebbi, 2018). Insufficient reporting of cross-sectional studies in various fields of medicine, including nursing and midwifery, can lead to potential errors in the synthesis and acceptance of new evidence and cause inaccuracies in the validation of articles (Von Elm, Altman, Egger, Pocock, Gøtzsche & Vandenbroucke, 2007). Assessing the reporting quality of articles can be a first step in identifying their weaknesses. Adherence to the established guidelines is the best way to determine the quality of these reports. The STROBE Statement is the main guideline for reporting observational articles, including cross-sectional studies. It was first used in 2007 in several journals, such as PLOS Medicine, Epidemiology, Annals of Internal Medicine, and The Lancet. Since that year, more than a hundred reputable journals have put the application of this statement on their agenda (Rahmani, Salehi, Molavi Vardanjani, Marzban & Behbood, 2017). The recommendations of this statement lead, on the one hand, to facilitating and clarifying the research path for the researcher and, on the other hand, to promoting the reader's understanding of the research (Ghaferi, Schwartz & Pawlik, 2021; Sharp, Bertizzolo, Rius, Wager, Gómez & Hren, 2019). The clarity of the study report can identify its strengths and weaknesses, allowing the reader to judge the validity of the results (Zhang, Zhou, Li, Zhou & Chen, 2021). Also, the expressiveness of the report writing (according to the guidelines) is directly related to receiving a higher number of citations (Vilaró et al., 2019). Cauley and colleagues have further shown

that the number of citations to journals that have used reporting guidelines is related to the impact factor of the journal (Caulley et al., 2020).

Although more than a decade has passed since the introduction of the STROBE statement, a number of cross-sectional study reports are still far from the guidelines (Capili, 2021; Wang & Cheng, 2020). In the field of nursing and midwifery in Iran, some journals have obtained international indexing by Scopus by improving the quality of their articles. These journals have taken steps towards using reporting guidelines, especially STROBE, in cross-sectional studies. However, detailed information on the quality of reporting in these journals is not available. Therefore, reviewing these articles for adherence to existing guidelines and comparing their reporting quality with the best international journals can help identify weaknesses in reporting. The assessment results can be used to develop strategies to improve the quality and position of the articles in global rankings.

The review of research literature showed that the study of adherence of cross-sectional studies in the field of occupational medicine(Aghazadeh-Attari et al., 2018), dermatology (Hopkins et al., 2023), journals of Indian Medical Society (Jeelani, Malik, Haq, Aleem, Mujtaba & Syed, 2014), related articles with congenital anomalies in infants in Iran (Irani, Bashtian, Khadivzadeh, Ebrahimipour & Nekah, 2018), metabolic syndrome in adults (Tapia, Ruiz, Ponce, Malaga & Miranda, 2015), journals in the field of allergy (Wiehn et al., 2021), in the field of gynecology and obstetrics (Adams, Benner, Riggs & Chescheir, 2018), and in the field of nutrition (Zhang et al., 2021) were done in different years and different countries. However, no studies were identified on the adherence of cross-sectional studies in nursing and midwifery to the guidelines. Therefore, the present study was conducted with three objectives. The first aim was to assess the adherence of the methodological section reports of Iranian nursing and midwifery journals (IRNMJ) and the top international nursing and midwifery journals (INNMJ) indexed in the Scopus database to the STROBE statement. The second aim of the research was to investigate the growth trend of the reporting quality of the methodology section of studies in different years in these journals. Finally, the third objective was to compare the methodological reporting of articles in two groups: the top international nursing and midwifery journals (INNMJ) and the Iranian nursing and midwifery journals (IRNMJ) in Scopus.

Material and Methods

Study design

The current research is a descriptive-analytical study, which compares the methodological report of cross-sectional articles published in IRNMJ in Scopus with the methodological report of cross-sectional articles published in the top three indexed INNMJ. The selection of top journals in the Scopus database was based on CiteScore criteria and expert opinion, which ensures that high-impact publications relevant to the scope of this study are included. It is compared in the Scopus database during the years 2017-2021. The list of selected journals is shown in Table 1. Due to confidentiality and research ethics, the detailed information of each journal by journal name is not reported in this article. If requested by the editors of these journals, detailed information will be provided to them.

Table 1

List of journals reviewed

No.	journals	Website
List of Iranian journals		
1	Iranian Journal of Nursing and Midwifery Research	https://journals.lww.com/jnmr
2	Evidence-based Care Journal	https://ebcj.mums.ac.ir/
3	Holistic Nursing and Midwifery	https://hnmj.gums.ac.ir/
4	HAYAT	https://hayat.tums.ac.ir
5	International Journal of Community-Based Nursing and Midwifery	https://ijcbnm.sums.ac.ir/
6	Nursing and Midwifery Studies	https://nmsjournal.kaums.ac.ir/
7	Nursing and Midwifery Sciences	https://brieflands.com/journals/journal-of-nursing-and-midwifery-sciences/issue/4759
8	Nursing practice today.	https://npt.tums.ac.ir/
International journals list		
1	International Journal of Nursing Studies	https://www.sciencedirect.com/journal/international-journal-of-nursing-studies
2	Journal of Pain and Symptom Management	https://www.jpsmjournal.com/
3	Women and Birth	https://www.womenandbirth.org/

Figure 1 shows how to select items.

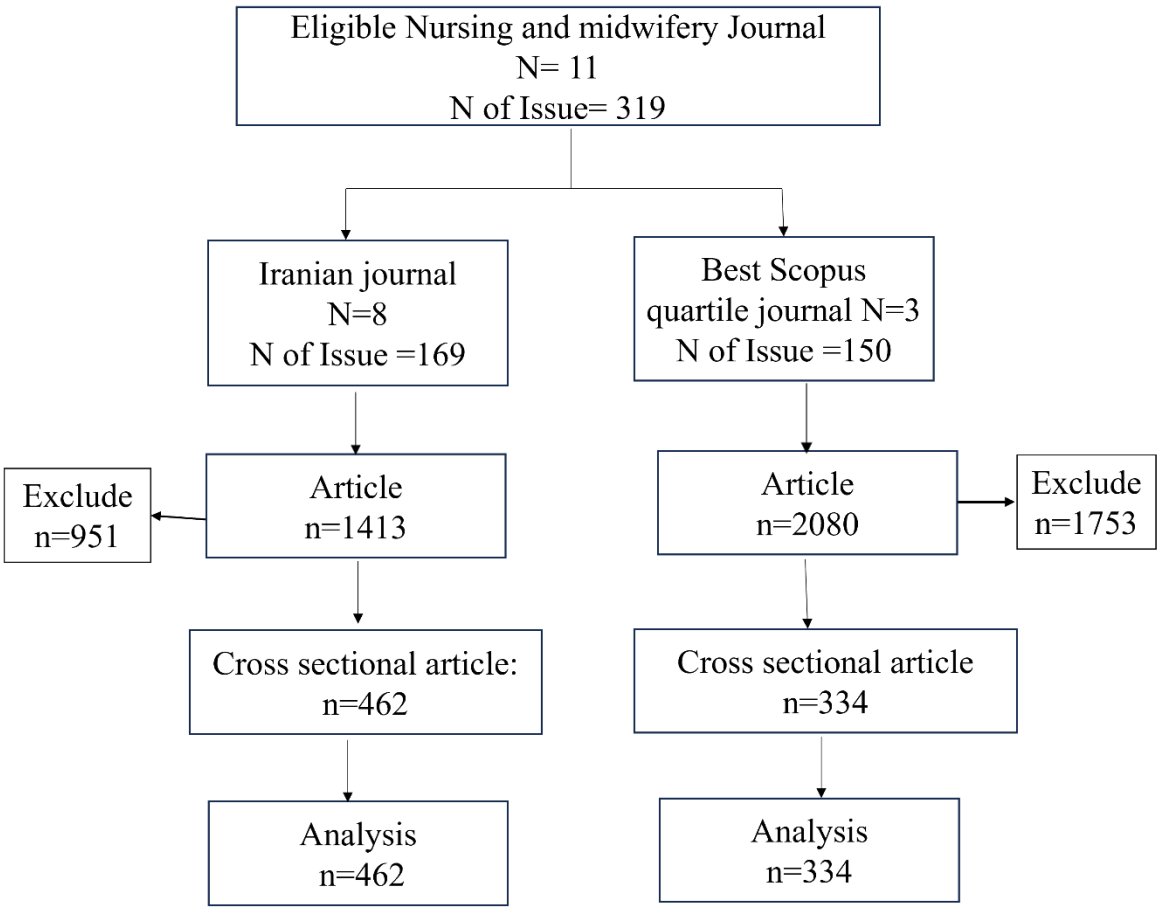

Figure 1: How to select articles

Eligible studies

The criteria for entering the journals into the research included publication in the period of 2017 to 2021, the journal being open access, being indexed in the Scopus database and in the field of nursing and midwifery. The criterion for article inclusion was the cross-sectional nature of each article. Criteria for excluding journals included interruption of publication in the section or over the entire period of study.

Sample size and sampling method

In accordance with the purpose of the study, which was to compare the average quality of methodological reporting between the two groups of journals, and given the lack of access to similar articles, the sample size was 253, with an effect size of 0.25, a type 1 error of 0.05, and 80% power. The article was considered for each group. As one of the aims of the research was to compare the reporting rates of methodological characteristics, the results of the Shaghaghian and Astaneh (2020) study were used. In this study, the percentage of correspondence reported in higher-ranked articles (indexed in ISI and Scopus) and lower-ranked articles was 52% and 45% respectively. Based on this, the sample size for each group was estimated to be 321 articles. By conducting a pilot study on three issues of the top Scopus journals in the field of nursing and midwifery, it was determined that this sample size could be achieved over 5 years. Because the number of IRNMJ indexed in Scopus does not match those of the top three journals, all Iranian journals in this field that met the inclusion criteria were thoroughly reviewed. Finally, of the 3493 articles screened, 796 were cross-sectional articles that were analyzed (334 articles in top Scopus journals and 462 articles in Iranian journals indexed in Scopus).

Instrument and procedure

The methodological section of the STROBE checklist for cross-sectional studies was used as a tool in this research. The STROBE checklist consists of 6 general sections, including title and abstract, introduction, methods, results, discussion, and other information (Von Elm et al., 2007). To check the reliability of the tool, 10% of the articles were completed using a checklist by a group of three people, including the researcher, the research supervisor, and a person experienced in research methodology. Finally, the agreement between the experts in the answers to the items was more than 0.90.

Data analysis

SPSS 19 software was used for data analysis. Frequency, mean, and standard deviation tables were used to describe the data. For each STROBE item, the number and percent of articles adhering to the item were calculated. For conditional items, percentages were calculated based on the number of applicable articles. Overall adherence for each group was calculated by dividing the mean article-level STROBE score (0–16) by 16 to obtain a mean percent adherence. This approach avoids the bias associated with averaging item-level percentages calculated on different denominators. An independent t-test was used to compare the mean STROBE checklist score between the INNMJ and IRNMJ groups, as well as the mean quality of methodological reporting score between the two groups by year. The chi-square test was used to compare the frequency of reported cases for each characteristic between two groups of journals. The mean score of the methodology report between different years was also compared

using one-way analysis of variance with the LSD post hoc test. The significance level was considered to be less than 0.05 in all cases.

Ethical Approval

All experimental protocols were approved by the Ethics Committee of 'REDACTED' and conducted according to the Declaration of Helsinki. All methods in the study were performed according to the relevant guidelines and regulations.

Results

Three thousand four hundred ninety-three articles were screened, and 796 cross-sectional articles were identified (334 articles in INNMJ and 462 articles in IRNMJ). The average percentage of adherence to the STROBE statement in INNMJ and IRNM was 80.25 and 72.00, respectively. Figure 2 shows the percentage of coverage of each item by the two groups of journals and compares them.

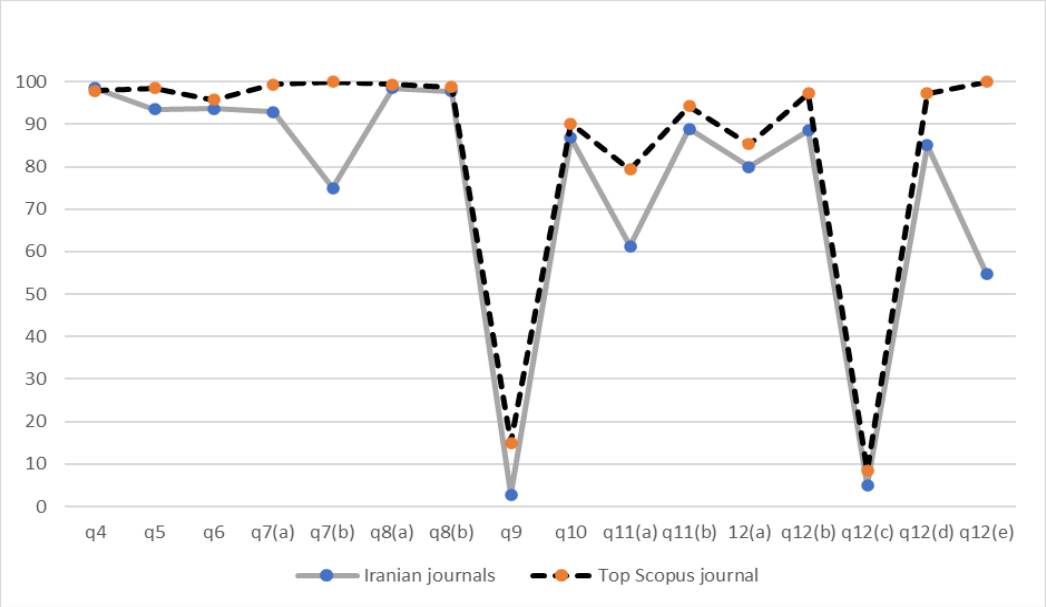

Figure 2: Reported percent of STORBE methodology items in two journal groups

The percentage of reporting items such as q7(a), q7(b), q9, q11(a), q12(a), q12(b), q12(e), q5, in the articles of top Scopus journals is significantly higher than in the articles of Iranian journals. For item q12(c), the difference between groups approached significance (P = 0.053), indicating a trend toward better reporting in the top Scopus journals. However, as stated in the methods, only items with P < 0.05 were considered statistically significant (Table 2).

Table 2
Adherence method section of the cross-sectional study to the STORBE checklist for two groups of articles from the IRNMJ and the top INNMJ

	Item No	Recommendation	Iranian journal (462 articles)	Top Scopus journal (334 articles)	P value
			N (%)	N (%)	
Study design	q4	Present key elements of the study design early in the paper	455 (98.5)	327 (97.9)	0.591
Setting	q5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	432 (93.5)	329 (98.5)	0.001
Participants	q6	Give the eligibility criteria, and the sources and methods of selection of participants	433 (93.7)	320 (95.8)	0.209
Variables	q7(a)	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers.	429 (92.9)	332 (99.4)	<0.001
	q7(b)	Give diagnostic criteria, if applicable (175**; 110***)	119 (75)	110 (100)	<0.001*
Data sources/ measurement	q8(a)	For each variable of interest, give sources of data and details of methods of assessment (measurement).	455 (98.5)	332 (99.4)	0.228*
	q8(b)	Describe the comparability of assessment methods if there is more than one group (44**; 77***)	43 (97.7)	76 (98.7)	0.686*
Bias	q9	Describe any efforts to address potential sources of bias	13 (2.8)	50 (15)	<0.001
Study size	q10	Explain how the study size was arrived at	401 (86.8)	301 (90.1)	0.182
Quantitative variables	q11(a)	Explain how quantitative variables were handled in the analyses.	283 (61.3)	265 (79.3)	<0.001
	q11(b)	If applicable, describe which groupings were chosen and why (36**; 35***)	32 (88.9)	33 (94.3)	0.674*
Statistical methods	12(a)	Describe all statistical methods, including those used to control for confounding	369 (79.9)	285 (85.3)	0.047
	q12(b)	Describe any methods used to examine subgroups and interactions (374**; 176***)	331 (88.5)	171 (97.2)	0.001
	q12(c)	Explain how the missing data were addressed	23 (5)	28 (8.4)	0.053
	q12(d)	If applicable, describe analytical methods taking account of sampling strategy (47**; 36***)	40 (85.1)	35 (97.2)	0.129*
	q12(e)	Describe any sensitivity analyses (330**; 217***)	181(54.8)	217 (100)	<0.001

Analytic test: chi-square or Fisher's exact test; *Fisher's exact test was done. P-values < 0.05 were considered statistically significant.
The percentage for items 7b, 8b, 11b, 12b, 12d, and 12e was calculated based on the number of articles to which these items are applicable.
** Number of articles applicable to this item in Iranian journals; *** Number of articles applicable to this item in top Scopus journals
N=Number

The mean score of the quality of the methodological report of articles published in top INNMJ was significantly higher than that of IRNMJ (t=-10.850; CI95%=-1.55, -1.08). The

mean score for articles published in the top INNMJ was also markedly higher by year (Table 3).

Table 3
Comparison methodology report mean scores between two journal groups (Iranian journal and top Scopus journals) per year.

	Iranian journal (IRNMJ)	Top Scopus journals (INNMJ)	t	P value	Mean differences	95% CI for mean differences
Years	Mean± SD	Mean± SD				
2017-2021 (Total)	11.52±1.96	12.84±1.46	-10.850	<0.001	-1.315	-1.55; -1.08
2017	10.76±2.24	12.16±1.97	-4.315	<0.001	-1.41	-2.05; -0.76
2018	11.20±1.88	12.35±0.98	-5.449	<0.001	-1.33	-1.78; -0.89
2019	11.58±1.88	12.86±1.55	-4.451	<0.001	-1.29	-1.86; -0.72
2020	11.94±1.87	13.31±0.97	-6.035	<0.001	-1.37	-1.82; -0.92
2021	12.17±1.57	13.41±1.12	-5.787	<0.001	-1.23	-1.66; -0.81
Performed test: Independent t-test Score range: 0-16 SD=Standard deviation; CI=Confidence interval						

The mean quality score of the methodology report varied between years (F=14.335; P value <0.001), with differences noted between each year and the two following years. (Tables 4 and 5).

Table 4
Comparison methodology report mean scores between years

Years	Mean± SD	F	P value
2017	11.38±2.23	14.335	<0.001
2018	11.76±1.70		
2019	12.08±1.86		
2020	12.49±1.71		
2021	12.71±1.52		
Performed test: Independent t-test and one-way ANOVA Score range: 0-16 SD=Standard deviation; CI=Confidence interval			

Table 5
Two-by-two comparisons of the methodological reporting mean score between years

(I) Journal_years	(J) Journal_years	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
2017	2018	-0.39	0.20	0.052	-.78; 0.01
	2019	-0.71	0.21	0.001	-1.12; -0.30
	2020	-1.12	0.20	<0.001	-1.51; -0.72
	2021	-1.33	0.20	<0.001	-1.73; -0.94
2018	2019	-0.32	0.21	.121	-.73; 0.09
	2020	-0.73	0.20	<0.001	-1.13; -0.34
	2021	-0.95	0.20	<0.001	-1.34; -0.55
2019	2020	-0.41	0.21	0.052	-.82; 0.01

(I) Journal_years	(J) Journal_years	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
	2021	-0.62	0.21	0.003	-1.04; -0.21
2020	2021	-0.21	0.20	0.296	-.61; 0.19

Figure 3 illustrates the trend in the average percentage of methodological reports from 2017 to 2021, separately for the top INNMJ and IRNMJ in the Scopus index.

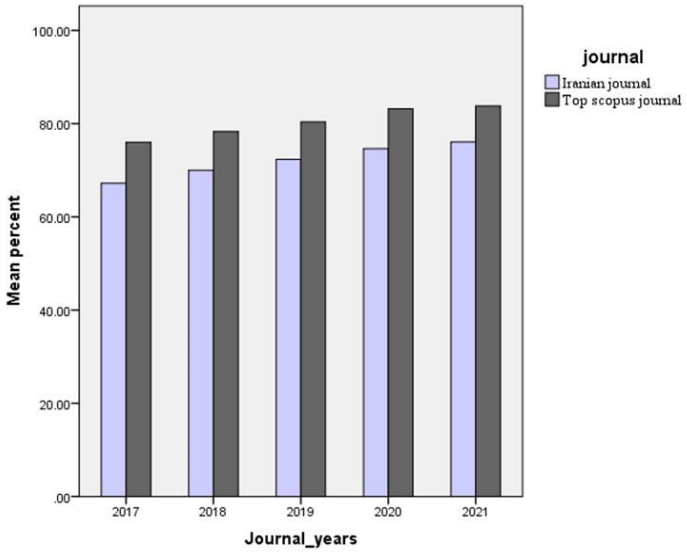

Figure 3: Mean percent of adherence to STORBE checklist by year in two journal groups

Discussions

The results of the study showed that the percentage of agreement with STROBE's statement was 72% in IRNMJ and 80.25% in INNMJ. In both groups of journals, some items of methodological reporting, such as describing any efforts to address potential sources of bias, describing which groupings were chosen and why, explaining how missing data were handled, sensitivity analysis, and defining methods of analysis taking into account sampling strategy, had a low percentage of reporting. In addition, the above examples, as well as the reporting of other items such as the method and setting of sampling, antecedents and consequences, confounders and moderators, were significantly more IRNMJ than in INNMJ. Finally, the mean score of methodology reports in Iranian journals, both in general and by year, was substantially lower than in the top Scopus journals.

The results of this research were compared with research in other areas of medicine due to the lack of articles in the field of midwifery and nursing. (See Appendix). Adams et al. (2018) in the field of obstetrics and gynecology reported a slightly higher match rate than Iranian journals and lower than top Scopus journals (Adams et al., 2018). Some other studies, such as the study by Jeelani et al. (2014) on Indian medical journals, Aghazadeh-Attari, Mobaraki, Ahmadzadeh, Mansorian and Mohebbi (2018) on health and occupational medicine journals, and Irani et al. (2018) on studies related to fetal abnormalities, showed a lower matching percentage than the two groups of journals reviewed in this study (around 60%) (Aghazadeh-Attari et al., 2018; Irani et al., 2018; Jeelani et al., 2014; Tapia et al., 2015; Zhang et al., 2021). The reason for the difference could be the older publication year of the articles in the journals.

This is because the quality of the methodological report has improved over time, in line with journal policy and better peer review of articles. The present study also shows an increase in adherence to both groups of journals over time. Of course, the type of journals and articles reviewed may also play a role in this difference.

In the methodological reports, the adherence rate to the characteristics of "efforts to reduce possible bias" and " confounders" in IRNMJ is low. The report on "the management of missing data" and the "sensitivity analysis" are also rated low. The low scores for these items are not specific to any particular area of medicine and paramedicine. In most previous studies that attempted to reduce possible bias and check for confounders, the reporting rate was low, at best around 50% (Adams et al., 2018; Aghazadeh-Attari et al., 2018; Choe et al., 2014; Irani et al., 2018; Jeelani et al., 2014; Rahmani et al., 2020; Tapia et al., 2015; Zhang et al., 2021). Most studies also reported "missing data" and "sensitivity analyses" as low as 30% which is a global phenomenon. Only the study by Kim et al. (2014) had a missing data reporting rate of 82%, due to the emphasis on responding to this item in nursing journals in South Korea.

Bias in studies, as well as a lack of attention to confounding factors, means that readers cannot trust the results of an article. Bias is present in most studies and may occur at any stage of research, and is unavoidable. There are also confounding variables in most studies, and their inclusion in statistical analyses can help to control for the effect of these confounders. Therefore, reporting efforts to reduce bias and control confounding can help editors and reviewers, and ultimately readers, to have a more accurate and correct understanding of the results. Sensitivity analysis (Cinelli & Hazlett, 2020) is one of the elements that can help reduce bias and estimate unmeasured confounders. Reporting this item helps the reader to better understand the contribution of antecedents in explaining outcomes. The lack of reporting on missing data and its management reduces the generalizability of results and can itself be a source of bias (Shaghaghian & Astaneh, 2020). The presence of large amounts of missing data may cause a subgroup of research participants to be considered suboptimal.

The results of the research showed that the methodology report of both groups of journals, i.e. IRNMJ, has increased over time, but the quality of the methodology report of cross-sectional articles of Iranian journals is always lower than that of INNMJ. In a study of EAACI journals between 2009 and 2018, Wiehn et al. (2021) showed an increase in the quality of reporting in the methodological section over time (Wiehn et al., 2021). In their study, Sorensen, Wojahn, Manske, and Calfee (2013) reported a 20% increase in adherence to the STROBE statement between 2005 and 2011. The results of this study are similar to the current research in terms of increasing STROBE statement scores over time. Bravo-Peña, Barona-Fong, Campo-López, Arroyav, and Calvache (2016) showed that the mean report quality score of cohort articles after the introduction of the STROBE statement was significantly higher than that of articles before the statement was introduced. In this study, the examination of the characteristics showed that only two or three characteristics were reported to have increased in the methodology section. This indicates that, along with the introduction of the STORBE statement, it is essential to try to expand its use. The quality of reporting in an article does not necessarily indicate the methodological quality of the article's methodological reporting. Still, the lack of appropriate reporting makes it difficult to examine the strengths and weaknesses of the article, as well as the reproducibility of the article (Adams et al., 2018). Although the primary responsibility for reporting articles and adhering to the STORBE Statement lies with the authors of the articles, and authors should be aware that failure of the article report to adhere to the STORBE Statement

may increase the chances of the article being rejected Nagarajan et al (2018); however, the editors and reviewers of the journals, as well as the policies adopted by the journal, can also help to improve the articles in terms of the quality of the article report.

Despite the improvement in the methodology reports of the cross-sectional studies of the IRNMJ indexed in Scopus, these journals remain far from INNMJ. They should increase adherence to the STROBE statement and aim to match the level of the top journals indexed in Scopus. These journals can help to improve the reporting quality of their articles, particularly by focusing on the characteristics of STROBE statements, which are reported at a lower rate. Moher and Altman (2015) suggest four strategies for improving the quality of methodology reporting in articles. Firstly, research managers in universities and other research organizations, such as funding bodies or technology transfer organizations, should provide guidance on the preparation and writing of the draft article. Second, editors should have the necessary skills, including knowledge of the guidelines. The third is to train authors on how to write articles and follow existing policies, and the fourth is to train referees, which universities can provide. In addition to strategies at the university level, it should also be planned at the journal level. Checking articles for adherence to the STROBE statement, first by the journal editor and then by the reviewers, can help identify weaknesses in reporting the necessary cases. The need to have a completed STROBE checklist at the time of article submission should also be part of journal policy, as this strategy may be beneficial in improving the quality of reporting of observational articles, including cross-sectional articles (Agha, Lee, Jeong, Fowler & Orgill, 2016; Wiehn et al., 2021).

Conclusion

In general, the mean scores of methodological reports of cross-sectional articles in IRNMJ and INNMJ were above average. The results show that the reporting quality of the methodology section in cross-sectional articles has increased in both groups of journals; however, the quality of the methodology report in IRNMJ is consistently lower than that in INNMJ. Therefore, Iranian nursing and midwifery journals (IRNMJ) should focus more on the methodology reporting quality of their articles to achieve the reporting quality level of the top Scopus journals in the field of nursing and midwifery. Both groups of journals studied should strive to fully comply with the defined standards, i.e., the STORBE Statement. Paying attention to the items that are least compliant with the STROBE statement is essential when planning to improve the quality of journal methodological reporting. Given that greater adherence to reporting guidelines can increase citations, authors of nursing and midwifery articles can hope to enhance the applicability/impact of their research by paying more attention to these guidelines. Teaching the STORBE statement to researchers and postgraduate students can help them to write a paper, including the methods section, with this statement in mind. By including the STROBE statement in the authors' guide and the need to complete it when submitting the article, as well as including this statement when submitting the article for peer review, journal editors can help increase the compliance of cross-sectional study reports with the STROBE statement.

There are some limitations to this research. First, this study investigated open-access journals, and care should be taken when generalizing the results to non-open-access journals. Another limitation of the study was that, similar to previous studies, the scoring of all items of the STROBE statement was the same; in other words, the value of all items was considered equal, whereas some items may be more critical.

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Appendix

Studies have been carried out in different years, in various medical specialties, and in other parts of the world, reporting assessment characteristics. Because the versions of STORBE have changed over time, some studies did not report multi-feature information; however, the amount of missing information is comparatively small and is mainly found in the subsets of the main feature. Comparing the results of this research with other examples in different medical fields

	Item No	IRNMJ	INNMJ	(Aghazadeh-Attari et al., 2018)	(Jeelani et al., 2014)	(Irani et al., 2018)	(Tapia et al., 2015)	(Adams et al., 2018)	(Zhang et al., 2021)	(Kim et al., 2014)	(Rahmani et al., 2020)
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Study design	q4	455 (98.5)	327 (97.9)	31 (51.7)	66 (82.5)	13(76)	17 (100)	29.03	197 (98.5)	39 (85.1)	93
Setting	q5	432 (93.5)	329 (98.5)	54 (90.0)	74 (92.5)	17 (100)	10 (59)		352 (77.2)	39 (85.1)	95
Participants	q6	433 (93.7)	320 (95.8)	51 (85.0)	55 (68.7)	15(85)	17 (100)	80.65	195 (97.5)	35 (76.6)	86
Variables	q7(a)	429 (92.9)	332 (99.4)	60 (100.0)	48 (60.0)	15(88)	16 (94)	77.42	193 (96.5)	44 (95.7	99
	q7(b)	119 (75)	110 (100)								
Data sources/ measurement	q8(a)	455 (98.5)	332 (99.4)	60 (100.0)	60 (75.0)	16(94)	16 (94)		198 (99.0)	28 (59.6)	99
	q8(b)	43 (97.7)	76 (98.7)	52 (86.7)							
Bias	q9	13 (2.8)	50 (15)	20 (33.3)	8 (10.0)	1(6)	7 (41)	41.94	54 (27.0)	18 (38.3)	24
Study size	q10	401 (86.8)	301 (90.1)	21 (35.0)	23 (28.7)	13(76)	9 (53)		6 (3.00)	32 (68.1)	42

	Item No	IRNMJ	INNMJ	(Aghazadeh-Attari et al., 2018)	(Jeelani et al., 2014)	(Irani et al., 2018)	(Tapia et al., 2015)	(Adams et al., 2018)	(Zhang et al., 2021)	(Kim et al., 2014)	(Rahmani et al., 2020)
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Quantitative variables	q11(a)	283 (61.3)	265 (79.3)		33 (41.2)	11(56)	16 (94)	67.74	39 (19.50)	46 (100.0)	98
	q11(b)	32 (88.9)	33 (94.3)	46 (76.7)							1
Statistical methods	12(a)	369 (79.9)	285 (85.3)	60 (100.0)	50 (62.5)	10(60)	15 (88)	54.84	188 (94.0)	45 (97.8)	86
	q12(b)	331 (88.5)	171 (97.2)	13 (21.7)			15 (88)				85
	q12(c)	23 (5)	28 (8.4)	29 (48.3)			4 (24)	29.03		38 (82.6)	100
	q12(d)	40 (85.1)	35 (97.2)	23 (38.3)			7 (41)				33
	q12(e)	181(54.8)	217 (100)	5 (8.3)			1 (6)		57 (28.5)		100

The values presented in the table represent the frequency (N) and percentage (%) of articles that reported each methodological aspect across different studies. Higher percentages indicate greater adherence to reporting standards within a particular category. This allows for a comparative assessment of reporting quality among various studies, highlighting strengths and potential areas for improvement.