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ORIGINAL RESEARCH

The impact of low back pain systematic reviews and clinical practice guidelines measured by the *Altmetric* score: Cross-Sectional study

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Abstract
Background: Although *Altmetric* has been widely used by researchers to monitor the audience of their articles, there are no studies that have analysed factors associated with *Altmetric* score for systematic reviews and clinical practice guidelines.
Objectives: 1) To analyse factors that could be associated with *Altmetric* scores for low back pain systematic reviews and clinical practice guidelines. 2) To describe the characteristics of these articles and their *Altmetric* scores.
Methods: We searched for all low back pain systematic reviews and guidelines indexed on the Physiotherapy Evidence Database published between 2015 and 2017. We extracted data related to the published paper, the publishing journal, and *Altmetric* scores.
Results: A total of 66 systematic reviews and 5 guidelines were included. The variable impact factor (independent variable) was associated with *Altmetric mentioned* score (dependent variable) with a β coefficient of 15.4 (95% CI: 0.97, 29.7) ajusted to all remaining variables. The variable number of citations normalized by year of publication (independent variable) was associated with *Altmetric reader* score (dependent variable) with a β coefficient of 6.4 (95% CI: 4.03, 8.72) ajusted to all remaining variables. We also found that the majority of the systematic reviews and guidelines were published in English, had a descriptive title, were published as open access, included multicenter studies, and had media release generated by the publishing journal.
Conclusion: Metrics related to the number of citations, such as the impact factor are associated with *Altmetric* scores.

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Introduction

Evidence-based practice is widely known as a decision-making process that involves not only the best scientific evidence but also clinical expertise and patient preferences.[1,2] The use of the best evidence induces the utilization of effective treatments.[1,2] Therefore, it is important that key messages from high quality research be widely delivered to clinicians, patients, and policy makers. Unfortunately, this does not always occur[1] as many clinicians still find difficulties in locating the best available evidence.[3,4] To overcome this issue, many authors and publishers are now sharing the results of their studies on the internet to reach and increase their target readership.[5,6] Currently, the use of social media is probably the most effective strategy to increase visibility of scientific articles. Accordingly, a new score named *Altmetric* was created to measure the attention publications attract online.[7]

The *Altmetric* score is composed of two independent scoring systems, the *Altmetric mentioned* and the *Altmetric reader*.[8] The *Altmetric mentioned* score is calculated by the number of mentions on social media *(e.g. Facebook, Twitter);* mainstream media coverage; encyclopaedias *(e.g. Wikipedia);* online platforms *(e.g. Faculty1000 and Publication Peer-Reviews);* videos *(e.g. YouTube);* sites on questions and answers *(e.g. Q&A stack overflow);* and documents *(e.g. policy documents)*. Each of these mentions receive different weights to calculate a total score (e.g. each mention on *Facebook* counts 0.25 points while a mention on *Twitter* counts 1.0 point).[8] The *Altmetric reader* score is calculated by number of mentions by reference managers such as *Mendeley, Connotea and CiteULike*. Each of these mentions receives identical weights for all reference managers (i.e. 1.0 point for each mention).

To date, there is one systematic review[9] and a few original research articles[10–13] demonstrating that number of citations and *Altmetric* scores are positively correlated (with correlation coefficients ranging between r = 0.30 and 0.61). In addition, Araujo et al.[14] found that, in low back pain clinical trials, the number of citations and the journal's impact factor were positively associated with *Altmetric* (with β coefficients of 5.2 and 3.4 points, respectively).[14] These results mean that for every citation received, the *Altmetric* score is likely to be 5.2 points higher. Similarly, for every point of journal's impact factor the *Altmetric* score is likely to be 3.4 points higher.[14] However, there are no studies that have identified the *Altmetric* scores or factors associated with the *Altmetric* score for systematic reviews and clinical practice guidelines. The investigation on factors associated with *Altmetric scores* could bring new insights for authors and journal editors on how to better disseminate research findings to clinicians using the internet.[1]

The primary objective of this study was to explore potential factors associated with the publishing journal and the published articles that could be associated with *Altmetric* scores for low back pain systematic reviews and clinical practice guidelines. The secondary objective of this study was to identify the main characteristics of these articles (impact factor, number of citations normalized by year of publication, language, type of title, type of access, number of centers contributing to the manuscript, and media release generated by the journal). In this study, systematic reviews and clinical practice guidelines for physical therapy interventions for low back pain were chosen by the authors because low back pain has the largest amount of evidence in the field of musculoskeletal health.[15] Additionally, low back pain is extremely prevalent[16–19] and involves high costs.[19–22]

Methods

Study design

This is a cross-sectional study. This manuscript was reported following the recommendations of the STROBE statement.[23]

Study selection

We selected all systematic reviews and clinical practice guidelines in the field of low back pain indexed on the Physiotherapy Evidence Database (PEDro - www.pedro.org.au). We chose PEDro because this is the most comprehensive database of clinical trials, systematic reviews, and clinical practice guidelines in the field of physical therapy.[24–26] On 01/08/2018 we identified all systematic reviews and clinical practice guidelines in low back pain indexed on PEDro, published between 2015 and 2017 and written in English, Spanish, or Portuguese. We decided to collect data published over a two year period to get a representative sample. *Altmetric* was launched in 2011. We decided to collect data from a sample starting in 2015 to get the most updated data as possible from *Altmetric*. We excluded all systematic reviews and clinical practice guidelines not related to low back pain and those with mixed populations. The two search strategies using PEDro advanced search option are described below:

- Strategy search: ''2015 until 2017'' [year of publication] and lumbar spine, sacroiliac joint or pelvis [part of body] and pain [problem] and ''systematic reviews'' [method].
- Strategy search: ''2015 until 2017'' [year of publication] and lumbar spine, sacroiliac joint or pelvis [part of body] and pain [problem] and ''practice guideline'' [method].

Data extraction

The following data were extracted:

- Downloaded from PEDro database: full title, authors' names, journal name, language of publication, year of publication, and type of intervention.
- Extracted from the full-text article: continent where the study was conducted, number of research centers, type of low back pain reported by the authors (e.g non specific, disc herniation or prolapse, degenerative conditions, radiculopathy, stenosis, spondylosis, spondylolisthesis or not reported), duration of symptoms, the risk of bias scale used by the article, time difference between year of search and year of publication, type of title categorized as declarative (title expressing the results of the review/guideline), interrogative (title introducing the review/guideline in the form of a question), or descriptive

(title describing the aim of the study, but does not reveal the main conclusions).
- Extracted from Web of Science: 2017 journal's impact factor and number of citations.
- Extracted from journal web-site: if the journal endorses either the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[27] or Appraisal of Guidelines for Research & Evaluation (AGREE),[28] if the paper was published as open access, if journal charges article processing fees, and if the journal produces its own media release (yes/no) (for example, if the journals have their own pages on Facebook, Twitter, Blogs, etc).
- Extracted scores from *Altmetric* web-site: total and individual scores of *Altmetric mentions* (individual scores (weights) from *Facebook (0.25 points), Twitter (1.0 point), Google+user (1.0 point), News Outlet (8.0 points), Blogs (5.0 points), Sina Weibo (1.0 point), Reddit (0.25 points), Linkedin (1.0 point), Highlight Platform (1.0 point), Pinterest (0.25 points), Wikipedia Page (3.0 points), Faculty1000 (1.0 point), Publication Peer-Reviews (1.0 point), YouTube (0.25 points), Q&A (stack overflow)(0.25 points)* and *Policy Documents (3.0 points)*. We also collected total and individual scores related to *Altmetric reader* (individual scores from *Mendeley (1.0 point), CiteULike (1.0 point) and Connotea (1.0 point))*.

Data related to *Altmetric* scores and number of citations divided by years since publication were collected on the same day for all articles because these scores are extremely dynamic.

Statistical analysis

The number of years since publication of the article was calculated with 2018 minus year of publication. The number of citations was normalized by the number of years since publication (number of citations divided by years since publication) as it is expected that older manuscripts are more likely to have a larger number of citations compared to newer ones. Descriptive statistics were used to present most of the data.

For the systematic reviews data, multivariable regression models were built to measure the associations of a range of variables with both (i) *Altmetric mentioned* score and (ii) *Altmetric reader* score. The independent variables in both models were: open access (yes/no), article processing fees (yes/no), if journal endorses PRISMA statement (yes/no), if journal produces its own media release (yes/no), if the study have descriptive title (yes/no), journal impact factor, multicenter study (yes/no), number of years since publication, and number of citations normalized by year of publication. These variables were chosen as they seem plausible to be associated with *Altmetric* scores based upon a previous study.[14]

Multivariable regression models were then built including all potential variables that were likely to predict the *Altmetric* score. The results were expressed as R^2 (explained variability of the model) and the individual contribution of each variable through the presentation of Beta coefficients and their respective 95% confidence intervals. We used the Statistical Package for Social Sciences version 20 for the analyses. As the number of clinical practice guidelines was low, it was not possible to built a multivariable regression model.

Results

Selection of eligible systematic reviews

A total of 7526 reviews were retrieved in PEDro database. From those, 126 reviews were considered as potentially eligible and were fully assessed. A total of 66 reviews fulfilled the inclusion criteria and were included.

Selection of eligible clinical practice guidelines

A total of 181 clinical practice guidelines were retrieved in PEDro database. From those, 7 clinical practice guidelines were considered as potentially eligible and were fully assessed. A total of 5 clinical practice guidelines fulfilled the inclusion criteria and were included.

Descriptive characteristics of the systematic reviews

Table 1 presents the characteristics of the systematic reviews. From the 66 reviews, 65 have an *Altmetric* score with a mean *mentions* score of 72.3 points (SD = 162.1) and a mean *reader* score of 65.5 points (SD = 69.9). All sytematic reviews were published in English, 92.4% had descriptive titles, 59.1% were published as open access, 72.7% included multicenter studies, and 93.9% had media release generated by the journal. In addition, the mean impact factor of the journals publishing these trials was 4.1 (SD = 4.8) with a mean number of citations normalized by year of publication of 5.6 (SD = 9.3).

Descriptive characteristics of the clinical practice guidelines

Table 2 presents the characteristics of the clinical practice guidelines. From the 5 articles, 4 have an *Altmetric* score with a mean *mentioned* score of 540.7 points (SD = 1036.4) and a mean *reader* score of 221.5 points (SD = 297.1). All clinical practice guidelines were published in English, had descriptive titles and were published as open access, 60% included multicenter studies, and 100% had media release generated by the journal. In addition, the mean impact factor of the journals publishing these clinical practice guidelines was 1.1 (SD = 14.7) with the mean number of citations normalized by year of publication of 7.5 (SD = 83.7).

Predictive factors of the systematic reviews

The variable impact factor was associated with *Altmetric mentioned* score with a β coefficient of 15.4 (95% CI 0.97, 29.7) ajusted to all remaining variables (Table 3). These variables accounted for 37% of the explained variance (adjusted $R^2 = 0.25$). This means that for every one point for the journal's impact factor, once adjusted for counfounders,

Table 1 Characteristics of the systematic reviews, *Altmetric mentioned* and *Altmetric reader* scores.

Variables	Characteristics of the systematic reviews n = 66	*Altmetric mentioned* score n = 65	*Altmetric reader* score n = 65
Published in English	66 (100.0)	72.3 ± 162.1	65.5 ± 69.9
Continent where the review was conducted			
Europe	19 (29.2)	29.1 ± 22.6	47.8 ± 37.9
Oceania	16 (24.6)	147.8 ± 270.0	83.2 ± 84.2
America	15 (21.6)	94.8 ± 168.6	94.0 ± 95.5
Asia	13 (20.0)	25.9 ± 28.9	40.0 ± 41.7
Africa	3 (4.6)	12.5 ± 13.4	44.0 ± 14.1
Type of title			
Descriptive	61 (92.4)	76.5 ± 168.1	67.6 ± 72.3
Interrogative	4 (6.1)	19.0 ± 8.6	36.5 ± 17.1
Declarative	1 (1.5)	37.0 ± 0.0	54.0 ± 0.0
Type of access			
Open access	39 (59.1)	66.7 ± 126.4	68.5 ± 67.9
Paywalled	27 (40.9)	80.3 ± 204.4	61.3 ± 73.9
Article processing fees			
No	41 (62.2)	94.1 ± 199.5	72.4 ± 77.7
Yes	23 (34.8)	37.9 ± 39.9	57.0 ± 54.9
Not reported	2 (3.0)	5 ± 2.8	17.5 ± 17.7
Centers			
Multicenter	48 (72.7)	90.4 ± 187.4	70.8 ± 77.4
Unicenter	18 (27.3)	25.2 ± 25.2	51.6 ± 43.9
Media release generated by the journal			
Yes	62 (93.9)	75.6 ± 166.7	63.0 ± 67.3
No	4 (6.1)	22.7 ± 28.2	102.5 ± 109.1
Journal endorses PRISMA statement			
Yes	39 (59.1)	104.7 ± 202.7	80.5 ± 83.6
No	27 (40.9)	23.8 ± 26.0	43.0 ± 32.4
Classification of low back pain based upon duration of symptoms			
Chronic	30 (45.5)	73.5 ± 137.7	65.1 ± 65.9
Acute, subacute or chronic	28 (42.5)	84.3 ± 206.0	75.4 ± 81.7
Subacute or chronic	3 (4.5)	8.3 ± 6.5	24.3 ± 18.8
Acute	2 (3.0)	62.0 ± 60.8	56.5 ± 9.19
Acute or subacute	2 (3.0)	21.5 ± 14.8	40.5 ± 7.8
Acute or chronic	1 (1.5)	29.0 ± 0.0	3.0 ± 0.0
Type of low back pain			
Non specific	39 (59.1)	95.1 ± 203.8	71.9 ± 74.6
Not reported	13 (19.8)	23.4 ± 24.4	48.9 ± 41.3
Disc herniation or prolapse	5 (7.6)	49.2 ± 71.4	70.4 ± 78.4
Degenerative conditions	3 (4.5)	8.0 ± 6.2	21.7 ± 6.5
Radiculopathy	2 (3.0)	160.5 ± 174.6	151.0 ± 182.4
Stenosis, spondylosis, spondylolisthesis	2 (3.0)	55.0 ± 50.9	46.5 ± 30.4
Other	1 (1.5)	11.0 ± 0.0	46.0 ± 0.0
Occupational	1 (1.5)	7.0 ± 0.0	30.0 ± 0.0
Type of interventions			
Strength training	36 (54.5)	95.5 ± 191.2	72.0 ± 75.6
Stretching, mobilization, manipulation, massage	26 (39.4)	107.6 ± 234.9	80.4 ± 86.6
Skill training	25 (37.9)	90.8 ± 159.7	72.7 ± 76.7
Education	16 (24.2)	109.5 ± 257.4	69.2 ± 61.1
Fitness training	12 (18.2)	56.6 ± 50.6	78.9 ± 78.5
Behaviour modification	10 (15.2)	45.0 ± 46.7	60.2 ± 58.8
Acupuncture	7 (10.6)	13.3 ± 13.0	36.0 ± 24.4

Table 1 (*Continued*)

Variables	Characteristics of the systematic reviews n = 66	*Altmetric mentioned* score n = 65	*Altmetric reader* score n = 65
Electrotherapy, heat, cold	5 (7.6)	15.0 ± 13.5	21.8 ± 18.4
Health promotion	2 (3.0)	546.5 ± 727.6	127.0 ± 130.1
Hydrotherapy, balneotherapy	3 (4.5)	17.0 ± 18.4	52.0 ± 16.9
Ortheses, taping, splinting	2 (3.0)	537.0 ± 741.0	139.5 ± 112.4
Respiratory therapy	1 (1.5)	3.0 ± 0.0	22.0 ± 0.0
Risk of bias scales			
Cochrane Risk of Bias Tool	41 (62.1)	85.3 ± 198.1	56.3 ± 64.1
Other	9 (13.7)	50.4 ± 71.7	74.4 ± 83.5
PEDro Scale	7 (10.7)	60.5 ± 38.6	58.8 ± 12.0
Not reported	5 (7.5)	45.8 ± 25.7	65.0 ± 51.4
Downs and Black Quality Index	2 (3.0)	58.5 ± 79.9	173.5 ± 136.5
Jadad Quality Score	2 (3.0)	11.0 ± 9.9	104.0 ± 90.5
Time of difference between year of search and year of publication	1.3 ± 0.9		
Number of years since publication	2.1 ± 0.7		
Number of citations normalized by publication time in years	5.6 ± 9.3		
Journal impact factor	4.1 ± 4.8		
Altmetric mentioned score			
Twitter	61.2 ± 102.1		
Facebook	11.2 ± 20.6		
News estories	2.9 ± 10.8		
Google + users	0.9 ± 2.6		
Blogs	0.6 ± 1.3		
Policy documents	0.1 ± 0.3		
Others	0.0 ± 0.0		
Total	72.3 ± 162.1		
Altmetric reader score			
Mendeley	65.4 ± 69.8		
Others	0.4 ± 0.1		
Total	65.5 ± 69.9		

Categorical data were expressed as number (percentage). Normal continuous data were expressed as mean ± standard deviation. Standardized citations: number of citations divided by the number of years since publication. The variable other dysfunctions related to disc degeneration, bulging discs, facet joint dysfunction, sacroiliac joint pain, osteoporosis at the lumbar, vertebral fracture, radicular and nonradicular low back pain. PEDro: Physiotherapy Evidence Database. The variable others related to *Altmetric mentioned*: weibo posts, pins, peer reviews, linkedin posts, faculty 1000 posts, Q&A posts and sillaby. The variable others related to *Altmetric reader*: CiteUlike and Connotea.

the *Altmetric mentioned* score is likely to be 15.4 points higher.[14]

The variable number of citations normalized by year of publication was associated with *Altmetric reader* score with a β coefficient of 6.4 (95% CI 4.03, 8.72) adjusted to all remaining variables (Table 4). These variables accounted for 60% of the explained variance (adjusted $R^2 = 0.53$). This means that for every citation normalized by year of publication, once adjusted for counfounders, the *Altmetric reader score* is likely to be 6.4 points higher.[14]

Discussion

The primary objective of our study was to analyse potential factors associated with *Altmetric* scores for low back pain systematic reviews and clinical practice guidelines. The secondary objective of this study was to identify the main characteristics of these scientific articles and their *Altmetric* scores. We found that systematic reviews published in a journal with a higher impact factor were associated with a higher *Altmetric mentioned* score. In addition, we observed that the number of times systematic reviews were cited was associated with a higher *Altmetric reader* score. Finally, we found that most systematic reviews and clinical practice guidelines were published in English, had a descriptive title, were published as open access, were multicenter studies, and had media release generated by the journal.

There are previous articles that have measured correlations between the number of citations and *Altmetric* scores.[9,10,29] These articles concluded that there is a positive correlation between number of citations and *Altmetric* scores.[9,10,29] In addition, Araujo et al.[14] found an association between low back pain randomized controlled trials and *Altmetric* scores. The main result was that number

Table 2 Characteristics of the clinical practice guidelines, *Altmetric mentioned* and *Altmetric reader* scores.

Variables	Caracteristics of the guidelines n = 5	*Altmetric mentioned* score n = 4	*Altmetric reader* score n = 4
Published in English	5 (100.0)	540.7 ± 1036.4	221.5 ± 297.1
Continent where the guideline was conducted			
America	4 (80.0)	721.0 ± 1190.1	295.3 ± 315.7
Asia	1 (20.0)	0.0 ± 0.0	0.0 ± 0.0
Type of title			
Descriptive	5 (100.0)	540.7 ± 1036.4	221.5 ± 297.1
Type of access			
Open access	5 (100.0)	540.7 ± 1036.4	221.5 ± 297.1
Article processing fees			
Yes	2 (40.0)	34.0 ± 28.3	114.5 ± 55.9
No	1 (20.0)	2095.0 ± 0.0	657 ± 0.0
Not reported	2 (40.0)	0.0 ± 0.0	0.0 ± 0.0
Centers			
Multicenter	3 (60.0)	27.0 ± 38.2	37.5 ± 53.0
Unicenter	2 (40.0)	1054.5 ± 1471.5	405.5 ± 355.7
Media release generated by the journal			
Yes	5 (100.0)	540.7 ± 1036.4	221.5 ± 297.1
Journal endorses AGREE statement			
Yes	2 (40.0)	1074.5 ± 1443.2	366.0 ± 411.5
No	2 (40.0)	7.0 ± 9.9	77.0 ± 108.9
Not reported	1 (20.0)	0.0 ± 0.0	0.0 ± 0.0
Classification of low back pain based upon duration of symptoms			
Acute, subacute or chronic	5 (100.0)	540.7 ± 1036.4	221.5 ± 297.1
Type of low back pain			
Non specific	3 (60.0)	34.0 ± 28.3	114.5 ± 55.9
Other	2 (40.0)	1047.5 ± 1481.4	328.5 ± 464.6
Type of interventions			
Stretching, mobilization, manipulation, massage	2 (40.0)	34.0 ± 28.3	114.5 ± 55.9
No appropriate value	2 (40.0)	2095.0 ± 0.0	657 ± 0.0
Acupuncture	1 (20.0)	0.0 ± 0.0	0.0 ± 0.0
Number of years since publication	1.0 [1.0]		
Number of citations normalized by publication time in years	7.5 [83.7]		
Journal impact factor	1.1 [14.7]		
Altmetric mentioned score			
Twitter	218.5 ± 410.4		
Facebook	87.2 ± 156.6		
News estories	40.2 ± 77.8		
Google + users	5.5 ± 9.1		
Blogs	4.0 ± 8.0		
Others	0.2 ± 0.5		
Total	540.7 ± 1036.4		
Altmetric reader score			
Mendeley	221.2 ± 296.6		
Others	0.2 ± 0.0		
Total	221.5 ± 297.1		

Categorical data were expressed as number (percentage). Normal continuous data were expressed as mean ± standard deviation. Non-normal continuous data were expressed as median [interquartile range]. Standardized citations: number of citations divided by the number of years since publication. The variable other dysfunctions related radicular and nonradicular low back pain. The variable others related to *Altmetric mentioned*: weibo posts, pins, peer reviews, linkedin posts, faculty 1000 posts, Q&A posts and sillaby. The variable others related to *Altmetric reader*: CiteUlike and Connotea.

of citations was positively associated with *Altmetric mentioned* and *reader* score (β coefficient = 5.2 and 10.1 points, respectively).[14] These results are very similar with number of citations and *Altmetric reader* score in our study (β coefficient = 5.6 points). Futhermore, Araujo et al.[14] found a positive association between journal's impact factor and *Altmetric mentioned* score (β coefficient = 3.4 points). Similarly, we also found association with journal's impact factor

Table 3 Multivariate model to predict characteristics of systematic reviews that were associated with *Altmetric mentioned* score.

Variable (R^2 = 0.37; Adjusted R^2 = 0.25)	Constant	B coefficient	95%CI	*p*
Journal characteristics	−13.62			
Open Access		0.74	−96.82, 98.30	.98
Article processing fees (yes)		−26.94	−21.47, 67.58	.57
Journal endorses PRISMA statement		10.83	−90.18, 111.84	.83
Media release generated by the journal		34.90	−156.00, 225.81	.71
Journal impact factor		15.36	0.97, 29.75	.03
Article characteristics				
Multicenter study		−6.54	−108.00, 94.93	.90
Number of years since publication		−21.99	−78.56, 34.57	.44
Descriptive title		31.56	−117.82, 180.95	.67
Number of citations normalized by year of publication		2.90	−4.02, 9.83	.40

Table 4 Multivariate model to predict characteristics of systematic reviews that were associated with *Altmetric reader* score.

Variable (R^2 = 0.60; Adjusted R^2 = 0.53)	Constant	B coefficient	95%CI	*p*
Journal characteristics	42.70			
Open Access		4.04	−29.01, 37.10	.81
Article processing fees (yes)		−15.54	−47.57, 16.49	.33
Journal endorses PRISMA statement		16.23	−18.00, 50.46	.34
Media release generated by the journal		−56.31	−121.00, 8.38	.08
Journal impact factor		−3.21	−8.08, 1.67	.19
Article characteristics				
Multicenter study		12.74	−21.64, 47.12	.46
Number of years since publication		18.13	−1.03, 37.31	.06
Descriptive title		0.47	−50.15, 51.09	.98
Number of citations normalized by year of publication		6.37	4.03, 8.72	<.001

and *Altmetric mentioned* score (β coefficient = 20.2 points). These associations between the variables number of citations and journal's impact factor with *Altmetric* scores can be explained since the impact factor is a measure of the frequency with which the ''average article'' in a journal has been cited in a particular year or period. The annual impact factor is a ratio between citations and recent citable items published. Thus, the impact factor of a journal is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years.[30]

We observed that most systematic reviews and clinical practice guidelines had a descriptive title. However, Araujo et al.[14] found that descriptive titles have negative association with *Altmetric* score in randomized controlled trials. Because of the large number of studies using descriptive titles our dataset was unable to discriminate this variable in the multivariable regression model. In addition, we found that the majority of articles were published as open access and had media release generated by the journal. These characteristics increase the likelihood of the article to be more accessed, read, and discussed. In addition, these articles are more likely to be mentioned online (such as in blogs, social media, etc).[14]

The major strength of this study is the use of a representative (i.e. 100%) sample of all systematic reviews and clinical practice guidelines indexed on PEDro and categorized as ''low back pain''. However, a possible limitation of this study is about to external validity as our articles represents only the effects of physical therapy interventions for patients with low back pain. It would be important to replicate our study in other areas to confirm our findings.

Conclusion

Whenever possible, researchers should preferrably publish their articles in journals with high impact factor (which is indirectly linked to citations). This aspect increases the visibility of the articles and consequently, their impact. New studies using different research areas to externally validate our findings are needed.

Conflicts of interest

The authors declare no conflicts of interest.

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