

Fifty most cited research papers in child pornography

Abstract

Online literature was extensively explored from 31st December 2017 to backwards using appropriate keywords pertaining to child pornography (CP) and related subspecialties in Google Scholar Web Search Engine to register 50 most cited articles. Any paper meeting the inclusion criteria i.e. case report, commentary or original article; published in a impact factor (>0.500) Journal; and had citations (≥ 15) on 31st December 2017 was identified before characterization of textural and bibliographic contents. Computation of citations showed averaged 108 citations per article (range 19-380; total articles=50). Of 34 articles (with >50 citations), 32 i.e. 94.1% were published in 2000-2015; predominantly after 2005. However, citation counts had insignificant association with publication years of the articles ($p=0.07$). Comparatively higher numbers of papers were published in *Sexual abuse: a Journal of Research and Treatment*, originated from North America or produced by University of Birmingham. Similarly, 3 researchers wrote ≥ 2 papers as principal author while cross sectional study design was opted in 7 articles. Cyber and general CPs were found as the major subspecialties. The findings support in understanding the trends of published papers against the theme of child pornography, globally.

Introduction

Child pornography (CP) provokes sexual aggression in the individual. The deviant behavior i.e. aggression then manifests in the form of child sexual abuse¹ especially child molestation. This is why CP is kept in the list of crimes and perpetrator is dealt as per laws of land for rigorous imprisonment and/or reformative psychiatric sessions. So, it is a converging point for legislative bodies, law enforcing agencies, professional psychiatrics, and public reporting organizations including research journals. These are the published articles which keep the readers aware of the dynamics and kinetics of a particular theme e.g. CP. It is mandatory for author(s) of a manuscript to cite references from previously published literature in introduction and discussion segments. Publication of the article increases citation frequency of each of the referred paper by 1. The impact of an article i.e. quality of article; or individual author on the researchers' community is evaluated using the number of times it was referenced in other papers.^{2,3} Bibliometrists apply citation analysis to assess the impact. Findings of bibliometric studies support research mentors and financing units in recognition of warranted research activity. Many articles have reported "citation classics" on various specialties after identification and analysis of top-cited papers.⁴⁻⁷ Similarly, it is practice of several journals to publish their own thematic "citation classics".^{8,9} However, literature is still scarce of most cited papers on child pornography – an evident research gap. The objective of present work was to categorize and scrutinize the features of the 50 frequently-cited papers on child pornography published in impact factor journals for the mass awareness about the menace.

Methods

Open-accessed online child pornography-related literature was extensively explored using Google Scholar Web Search Engine. Keywords "child pornography, PDF and year (starting from 2017 backwards)" were used to get articles with at least 50 citations on December 31, 2017. Each article was downloaded for identification; and textural and bibliographic characterization.

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Exclusion criteria

All papers other than original or commentary articles; and case reports were excluded after visual analysis. Similarly, publication in low (≤ 0.500) or none impact factor journals also made them ineligible for recruitment.

Calculation of impact factor

The impact factor (IF) of the journal is calculated by dividing total cites to articles published in last 2 years with total numbers of articles published in these years.

Frequency of citation; and explored period

The numbers of citations were first reduced to 30 and ultimately 15 to increase the numbers of selected articles. To achieve the set target of more than 50 articles, the publication period expanded back to 1986 (from 2017). The articles were ranked according to descending numbers of citations while top 50 were selected to tabulate the data.

Retrieved information

Name of principal author, journal and year of publication were retrieved from title of the article; country of origin and affiliation of authors from authors' information; and study design and subfield of study from thorough review of the article.

Statistical approach

The statistical association between number of citations and year of publication was observed using codes ['0' for ≤ 50 and '1' for > 50 citations while '0' for 2000-2017 and '1' for publication session 1986-1999] in chi-squared test and cross tabulation. A p-value (< 0.05) was taken as significant. Data was processed using SPSS version 16.0.

Analysis and discussion

Increase in citation rate not only increases the creditability of a particular article but also enhances the impact factor of the publishing

journal.² Actually, it marks interest of other investigators in the contents of the paper especially with reference to specialty e.g. child pornography subspecialty cyber child pornography (CCP).

Content analysis

It is interesting rather difficult to discuss all top-cited articles of a specialty in detail.² For convenience, child pornography-related information can be extracted from top 10 articles (i.e. 20% of the total) from a list of articles arranged in descending sequence. To meet the requirement, a list (Table 1) was developed in present work. The contents of the articles presented key advancement in child pornography and allied subspecialties as 4 articles (i.e. 40% of 10) showed importance of CCP towards child sexual abuse (CSA) or molestation. At position 5, Sabina and colleagues mentioned that boys (aged<18 years) are more inclined to see extreme images e.g. rape than girls in 2008; at a position 7, Bourke & Hernandez (2009) reported more likelihood of child sexual abuse via hand-on act by internet offenders compared to non internet perpetrators; at position 1, with a National survey of 2574 law enforcing agencies meant for 129 sexual offenses against juvenile victims, Wolak and coworkers highlight trapping of children for CSA through internet chat in 2004; and at position 9,

Webb and associates (2007) point out significantly lesser chance of failure of internet sex offenders in community (after follow up) than molesters with respect to all kinds of recidivism. Quayle and Taylor (2002) at position 6 described six principal characteristics including avoiding real life in child pornography offenders. Child pornography is a burning issue of the world on account of associated adversities e.g. child exploitations. It is evident by Seto and colleagues (2006) at position 2, with the significant association between child pornography and sexual arousal to children; Seto and Eke in 2005 at position 8, indicating no significant impacts of follow up in child pornography offenders with prior criminal record; along with Alder at position 4 declares law for protection of children from exploitations as perverse law in 2001. Rest of the two articles from top 10 positions reveal persistence of sexual urges in a patient with acquired pedophilia and orbitofrontal tumor (Burns et al., 2003; at position 3); and emergence of CSA perpetrators interested in child pornography or seduction of children using cyber technology (Quayle and Taylor, 2003; at position 10). The content of the selected 10 articles seems to endorse generally perceived sequelae of the events i.e. child pornography – sexual arousal – CAS accompanying insignificant impact of imprisonment; and/or follow up sessions by psychiatrists.

Table 1 The top 50 cited papers in child pornography

Rating	Paper	No. of citation
1	Wolak J, Finkelhor D, Mitchell K. Internet-initiated sex crimes against minors: Implications for prevention based on findings from a National study. <i>Journal of Adolescent Health</i> 2004; 35:424.e11-424.e20.	380
2	Seto MC, Cantor JM, Blanchard R. Child pornography offenses are a valid diagnostic indicator of pedophilia. <i>Journal of Abnormal Psychology</i> 2006; 115(3): 610-615.	345
3	Burns JM, Swerdlow RH. Right orbitofrontal tumor with pedophilia symptom and constructional apraxia sign. <i>Archives of Neurology</i> 2003; 60(3):437-440.	306
4	Adler A. The perverse law of child pornography. <i>Columbia Law Review</i> 2001; 101(2):209-273.	285
5	Sabina C, Wolak J, Finkelhor. The Nature and Dynamics of Internet Pornography Exposure for Youth. <i>CyberPsychology and Behavior</i> 2008; 11(6):691-693.	264
6	Quayle E, Taylor M. Child pornography and the internet perpetuating a cycle of abuse. <i>Deviant Behavior</i> 2002; 23(4): 331-361.	252
7	Bourke ML, Hernandez AE. The 'Butner Study' Redux: A report of the incidence of hands-on child victimization by child pornography offenders. <i>Journal of Family Violence</i> 2009; 24:183.	252
8	Seto MC, Eke AW. The criminal histories and later offending of child pornography offenders. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2005; 17: 201-210.	219
9	Webb L, Craissati J, Keen S. Characteristics of internet child pornography offenders: A comparison with child molesters. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2007; 19(4):449-465.	204
10	Quayle E, Taylor M. Model of problematic internet use in people with a sexual interest in children. <i>CyberPsychology and Behavior</i> 2003; 6(1):93-106.	189
11	Seto MC, Hanson RK, Babchishin KM. Contact sexual offending by men with online sexual offenses. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2011; 23(1):124-145.	183
12	Quayle E, Vaughan M, Taylor M. Sex offenders, Internet child abuse images and emotional avoidance: The importance of values. <i>Aggression and Violent Behavior</i> 2006; 11(1): 1-11.	132
13	Elliot IA, Beech AR. Understanding online pornography use: Applying sexual offense theory to internet offenders. <i>Aggression and Violent Behavior</i> 2009; 14(3): 180-193.	123
14	Beech AR, Elliott IA, Birgden A, et al. The internet and child sexual offending: A criminological review. <i>Aggression and Violent Behavior</i> 2008; 13(3):216-228.	117
15	Eke AW, Seto MC, Williams J. Examining the Criminal History and Future Offending of Child Pornography Offenders: An Extended Prospective Follow-up Study. <i>Law and Human Behavior</i> 2011; 35(6):466-478.	114
16	Howitt D, Sheldon K. The role of cognitive distortions pedophilic offending: Internet and contact offenders compared. <i>Psychology, Crime and Law</i> 2007; 13(5):469-486.	114

Table Continued....

Rating	Paper	No. of citation
17	Quayle E, Taylor M. Child Seduction and Self-Representation on the Internet. <i>CyberPsychology and Behavior</i> 2001; 4(5): 597-608.	107
18	Quayle E, Taylor M. Paedophiles, pornography and the internet: Assessment issue. <i>The British Journal of Social Work</i> 2002; 32(7):863-875.	104
19	Burke A, Sowerbutts S, Blundell B, et al. Child pornography and the internet: Policing and treatment issues. <i>Psychiatry, Psychology and Law</i> 2002; 1: 79-84.	104
20	Wolak J, Finkelhor D, Mitchell K. Child pornography possessors: Trends in offender and case characteristics. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2011; 23(1): 22-42.	104
21	Middleton D, Elliott IA, Mandeville-Norden R, et al. An investigation into the applicability of the Ward and Siegert Pathways Model of child sexual abuse with Internet offenders. <i>Psychology, Crime and Law</i> 2006; 12(6):589-603.	102
22	Endrass J, Urbaniok F, Hammermeister LC, et al. The consumption of internet child pornography and violent and sex offending. <i>BMC Psychiatry</i> 2009; 9:43.	100
23	Neutze J, Seto MC, Schaefer GA, et al. Predictors of child pornography offenses and child sexual abuse in a community sample of pedophiles and hebephiles. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2011; 23(2):212-242.	94
24	Burke DD. The criminalization of virtual child pornography: A constitutional question. <i>Harvard Journal on Legislation</i> 1997; 34(2):439-472.	90
25	McCarthy JA. Internet sexual activity: A comparison between contact and non-contact child pornography offenders. <i>Journal of Sexual Aggression</i> 2010; 16(2):181-195.	88
26	Babchishin KM, Hanson RK, VanZuylen. Online child pornography offenders are different: A meta-analysis of the characteristics of online and offline sex offenders against children. <i>Archives of Sexual Behavior</i> 2015; 44(1):45-66.	85
27	Seto MC, Babchishin KM, Wood JM, et al. Online solicitation offenders are different from child pornography offenders and lower risk contact sexual offenders. <i>Law and Human Behavior</i> 2012; 36(4):320-330.	68
28	Steel CMS. Child pornography in peer-to-peer networks. <i>Child Abuse and Neglect</i> 2009; 33(8):560-568.	64
29	Ost S. Children at Risk: Legal and Societal Perceptions of the Potential Threat that the Possession of Child Pornography Poses to Society. <i>Journal of Law and Society</i> 2002; 29(3): 436-460.	62
30	Levy, N. Virtual child pornography: The eroticization of inequality. <i>Ethics and Information Technology</i> 2002; 4(4): 319-323.	55
31	Long ML, Alison LA, McManus MA. Child pornography and likelihood of contact abuse: A comparison between contact child sexual offenders and noncontact offenders. <i>Sexual Abuse: A Journal of Research and Treatment</i> 2013; 25(4): 370-395.	55
32	Schell BH, Martin MV, Hung PCK, et al. Cyber child pornography: A review paper of the social and legal issues and remedies—and a proposed technological solution. <i>Aggression and Violent Behavior</i> 2007; 12(1):45-63.	54
33	Seto MC, Reeves L, Jung S. Explanation given by child pornography offenders for their crimes. <i>Journal of Sexual aggression</i> 2010; 16(2):169-181.	52
34	Pierce RL. Child pornography: A hidden dimension of child abuse. <i>Child Abuse and Neglect</i> 1984; 8(4):483-493.	52
35	Jewkes Y, Andrews C. Policing the filth: The problems of investigating online child pornography in England and Wales. <i>Policing and Society</i> 2005; 15(1):42-62.	45
36	Tyler RP, Stone LE. Child pornography: Perpetuating the sexual victimization of children. <i>Child Abuse and Neglect</i> 1985; 9(3):313-318.	44
37	Seigfried KC, Lovely RW, Rogers MK. Self-Reported Online Child Pornography Behavior: A Psychological Analysis. <i>International Journal of Cyber Criminology</i> 2008; 2(1):286-297.	40
38	McLelland M, Yoo S. The International yaoi boys' love fandom and the regulation of virtual child pornography: The implications of current legislation. <i>Sexuality Research and Social Policy</i> 2007; 4:93.	39
39	Reijnen L, Bulten E, Nijman H. Demographic and personality characteristics of internet child pornography down loaders in comparison to other offenders. <i>Journal of Child Sexual Abuse</i> 2009; 18(6):611-622.	36
40	Paul B, Linz DG. The effects of exposure to virtual child pornography on viewer cognitions and attitudes toward deviant sexual behavior. <i>Communication Research</i> 2008; 35(1):3-38.	33
41	Burgess AW, Hartman CR. Child abuse aspects of child pornography. <i>Psychiatric Annals</i> 1987; 17(4):248-253.	31
42	Meridian HL, Curtis C, Thakker J, et al. The three dimensions of online child pornography offending. <i>Journal of Sexual Aggression</i> 2013; 19(1):121-132.	30

Table Continued....

Rating	Paper	No. of citation
43	Oswell D. When images matter: Internet child pornography, forms of observation and an ethics of the virtual. <i>Information, Communication and Law</i> 2006; 9(2):244-265.	30
44	Cattaneo C, Obertová Z, Ratnayake M, et al. Can facial proportions taken from images be of use for ageing in cases of suspected child pornography? A pilot study. <i>International Journal of Legal Medicine</i> 2012; 126:139-144.	28
45	Knudsen DD. Child sexual abuse and pornography: Is there a relationship? <i>Journal of Family Violence</i> 1988; 3(4):253-267.	28
46	Mitchell KJ, Finkelhor D, Jones LM, et al. Prevalence and Characteristics of Youth Sexting: A National Study. <i>Pediatrics</i> 2012; 129(1):13-20.	28
47	Schoettle UC. Child exploitation: A study of child pornography. <i>Journal of the American Academy of Child Psychiatry</i> 1980; 19: 289-299.	26
48	Ray JV, Kimonis ER, Donoghue C. Legal, ethical, and methodological considerations in the Internet-based study of child pornography offenders. <i>Behavioral Sciences and the Law</i> 2010; 28(1):84-105.	23
49	McCabe KA. The role of internet service providers in cases of child pornography and child prostitution. <i>Social Science Computer Review</i> 2008; 26(2):247-251.	21
50	Gillespie A. Legal definitions of child pornography. <i>Journal of Sexual Aggression</i> 2010; 16(1):19-31.	19

Publication year and citation rate

All the papers published from 1984 (Pierce, Child Abuse and Neglect, 1984) to 2015 (Babchishin et al., Archives of Sexual Behavior, 2015). Publication rate was higher i.e. 88% (n=44) after 1999. Overall, each article was cited 108 times (range 19-380) whereas most of the papers i.e. 32 (72.7%) published after 1999 were referenced more than 50 times as shown in Table 2. However, insignificant association was found between year of publication and No. of citations against articles ($p=.07$). Time imparts impacts on citation rate of articles. Increase in citation of an article proceeds with passage of time. So, old paper would have chances to dominate high-ranked recent articles.¹⁰ A negation of this perception seems in our work where most of the top-cited articles showed their publication tenure between 2000-2015 (rather 1984-1999). However, this may be interpreted in term of a process “obliteration by incorporation” of Garfield¹¹ in 1987 which holds incorporation of content of older papers into modern knowledge responsible for lessening the citation rate. According to a study by Baltussen & Kindler,³ the true profile of a paper (i.e. impact and eminence) can only be evaluated after 2 decades of publication year.

Table 2 Characteristics of citations with reference to year of publication (n = 50)

Characteristic	Output
Citations; Mean+/-SD (range)	108+/-109 (19-380)
Cross tabulation; % (f)	
Published in 1984-1999	
≤50 citations	66.7 (4)
>50 citations	33.3 (2)
Published in 2000-2015	
≤50 citations	27.3 (12)
>50 citations	72.7 (32)
Association between year of publication and citation frequency	P = .07*

Child pornography and interest of investigators

Table 3 reveals three investigators as 1st author of 2 (Wolak J) or more than 2 (e.g. Seto MC) articles on child pornography (CP). The emergence of three investigators as 1st author in 2 or more articles on CP is not surprising as similar trend can also be observed in other specialties e.g. urology.² Actually, this highly creditable position is assigned to person with maximum contribution in the article. Various factors like environmental stimuli, personal aptitude and wish for being recognized divert to write more and more in a particular dimension of prevailing issue.

Table 3 Frequent authors of the top 50 cited papers in child pornography

Author	f	1st author	2nd author	Other
Seto MC	7	5	2	-
Quayle E	5	5	-	-
Wolak J	4	2	1	1
Elliot IA	3	1	2	-
Beech AR	3	1	1	1
Mitchell KJ	3	1	-	2
Eke AW	2	1	1	-
Babchishin	2	1	-	1

Child pornography and origin of papers

Papers originated from 9 countries (Table 4); predominated by United States and United Kingdom (22 and 15, respectively). The production of substantially higher numbers of top cited articles in child pornography by United States shows a fair resemblance with already reported¹¹ citation classics. The reasons behind this magnitude would be writing trends, opportunities, incentives and cooperative (somewhat biased) community of peer reviewers¹² in the US-originated journals.

Child pornography and production of papers

University of Birmingham produced 6 articles (Table 5). However, 7 other institutions produced 2-4 papers. Production of articles on the

same theme might be a synchronized output of human resources, financial aid, and availability of modern technologies/gadgets¹³ and other facilitations.

Table 4 Countries of origin of top 50 cited papers in child pornography

Country	No. of papers
United States	22
United Kingdom	15
Canada	5
Australia	3
New Zealand	1
Germany	1
Switzerland	1
Netherlands	1
Italy	1

Table 5 Institutions of origin with 2 or more top-cited papers in child pornography

Rank	Institution	No. of papers
1	University of Birmingham	6
2	University of Hampshire	4
3	Royal Ottawa Mental Health Centre for addiction and mental health	3
5	University of Western California	2
6	John Jay College of Criminal Justice, Law and Police Science	2
7	KU Alzheimer's Disease Centre	2
8	University of Purdue	2

Child pornography and impact factor journals

The 'Sexual abuse: a journal of Research and Treatment' (papers=6; impact factor=2.926) lead the record when journals were ranked according to numbers of top cited articles (Table 6). Most of the top-cited articles of present study showed their association with high impact factor (≥ 1.000) journals. Publication in high impact journal is indirect admiration of the article by the journal as journal prefers those articles which earn high citations to enhance/maintain its impact factor.¹² Beside it, journals also announce certain incentives e.g. speedy publication to the authors using most recent articles from high impact journals to elevate their existing impact factor. This is nothing but mere manipulation of the citation accounts.

Child pornography and study designs

Detailed review of the top-cited articles showed 'Cross-sectional study design' as predominated type (Table 7). It is in contrast to various studies of most cited papers in other fields e.g. review articles in anesthesia (Baltussen and Kindler 2004). Application of cross-sectional design allows authors to use self-produced/already validated questionnaire in measuring child pornography-related aspects e.g. aptitude towards possession of child pornographic content, expertise in peer-to-peer transfer of sexually explicit materials (SEMs), and zeal for contact child sexual abuse/molestation. Similarly both, perpetrators and offenders of child pornography can be interviewed

to review the existing law enforcing protocols. Such studies are easy to understand; hence provide stock to research community for further investigations.

Table 6 Journals versus no. of cited papers in child pornography

Rating	Journal	f	I.F
1	Sexual abuse: a Journal of Research and Treatment	6	2.926
2	Journal of Sexual aggression	5	1.082
3	Aggression and Violent Behavior	4	1.928
4	Cyber Psychology and Behavior	3	3.76
5	Child Abuse and Neglect	3	2.397
6	Law and Human Behavior	2	2.162
7	Journal of Family Violence	2	0.871
8	BMC Psychiatry	1	2.613
9	Deviant Behavior	1	1
10	Psychiatry, Psychology and Law	1	0.662
11	Achieves in Neurology	1	10.029
12	Journal American Academy of Child and adolescent Psychiatry	1	6.442
13	Pediatrics	1	5.705
14	Journal of Abnormal Psychology	1	5.538
15	Journal of Adolescent Health	1	3.612
16	Columbia Law Review	1	3.07
17	Communication Research	1	3.021
18	Achieves of Sexual behavior	1	2.7
19	Information, Communication and Society	1	2.692
20	International Journal of Legal Medicine	1	2.382
21	Social Science Computer Review	1	2.293
22	Policing and Society	1	1.632
23	Sexuality research and Social policy	1	1.547
24	Ethics and Information Technology	1	1.5
25	Behavioral Science and the Law	1	1.449
26	Psychology, Crime and Law	1	1.408
27	International Journal of Cyber Criminology	1	1.25
28	The British Journal of Social Work	1	1.103
29	Journal of Law and Society	1	0.796
30	Journal of Sexual abuse	1	0.649
31	Harvard Journal on Legislation	1	0.519
32	Psychiatric Annals	1	0.323

Table 7 Study designs of 50 most cite articles in child pornography

Study design	No. of articles
Cross sectional (Questionnaire-derived)	17
Miscellaneous [Longitudinal (2), Modulation (2), Basic legislative (2), Validation study (1), Case-control (1)]	8
Retrospective	5
Observational	4
Review article	4
Case report	4
Commentary	4
Basic sociology/psychology	4

Subspecialties of child pornography

Cyber child pornography (27.54%) and general child pornography (10.20%) were observed as the high-rated field areas after content reviews as displayed in Table 8. Like other fields, the child pornography is multidimensional while includes subspecialties e.g. cyber child pornography. Easy access to cyber technology not only expanded the business of so called Dark web (a part of deep web) but also facilitated P2P i.e. peer-to-peer transfer of sexually explicit materials – a predictor of child sexual abuse/offense, a concern of law enforcing agencies. In the present study, fall of most of the articles in this subspecialty showed its significant share in of child pornography. Our study used most recent impact factors (e.g. 2016/17) with a few exceptions – a probable matter of criticism; although internet exploration of top-cited articles in child pornography extending back to 1984. To address this issue, librarians and many books including Taylor and Quayle's book *Child Pornography: An Internet Crime* and Bechtel's *Child Pornography: Law and Policy*. Despite of this extensive effort, there is chance of missing some articles of the subject. Similarly many articles were ignored for not qualifying the selection criteria: type of article, minimum citation rate, and impact factor of journal (≥ 0.500).

Table 8 Subspecialties of 50 most cite articles in child pornography

Subspecialty	No. of articles
Cyber child pornography (CCP)	27
General child pornography (GCP)	10
Pedophilia	7
Peer-to-peer (P2P) networking	2
Law enforcement cum prosecution	2
Child pornography industry	1
Emotional avoidance (EA)	1

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None.

Conflicts of interests

The author declares that there is no conflicts of interest.

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3. Baltussen A, Kindler CH. Citation classics in anesthetic journals. *Anesthesia and Analgesia*. 2004;98(2):443–451.
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6. Kwan YH, Chua CJ, Kian JXL, et al. Top 100 cited articles in the field of rheumatology. *European Journal of Rheumatology*. 2017;4(4):294–304.
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8. Shuaib W, Acevedo JN, Khan MS, et al. The top 100 cited articles published in emergency medicine journals. *The American Journal of Emergency Medicine*. 2015;33(8):1066–1071.
9. Bui-Mansfield LT. Top 100 cited AJR articles at the AJR's centennial. *American Journal of Roentgenology*. 2006;186(1):3–6.
10. Picknett T, Davis K. The 100 most-cited articles from JMB. *Journal of Molecular Biology*. 1999;293(2):171–176.
11. Garfield E. 100 citation classics from the journal of the American Medical Association. *Journal of the American Medical Association*. 1987;257(1):52–59.
12. Paladugu R, Schein M, Gardezi S, et al. One hundred citation classics in general surgical journals. *World Journal of Surgery*. 2002;26(9):1099–1105.
13. Al-Hariri MT, A Al-Hattami. Impact of students' use of technology on their learning achievements in physiology courses at the University of Dammam. *Journal of Taibah University Medical Sciences*. 2017;12(1):82–85.