

# **A Meta-Analysis of Social Media & Learning Studies in Educational Research**

Birgöl Kutlu<sup>1</sup>, Burç Çeken<sup>1</sup>, Meltem Mutlutürk<sup>1</sup>, Canan Türkmen<sup>2</sup>,

<sup>1</sup>Department of Management Information Systems, Bogazici University, Istanbul, TURKEY

<sup>2</sup>Department of Mathematics & Science Education, Bogazici University, Istanbul, TURKEY

## **Abstract**

Understanding the main focus of social media for learning studies and how they are conducted is important to understand where the research is headed. Hence, this study is aimed to explore and analyze state of the art articles that focus on both social media and learning. Meta-analysis is employed as a methodology and 152 articles published between 2008 and 2017 are investigated through content analysis. The results are interpreted with descriptive statistics. As a result, it is found that; (1) most of the studies incorporate Facebook, Twitter, and YouTube for learning, (2) the majority of studies are based on students, (3) quantitative approach using surveys are frequent while case studies and experimental designs are the primary means of research method, (4) higher education is in the focus of the studies, (5) Europe contributed to the literature the most, and (6) the number of studies is increasing throughout the years.

## **Keywords**

Social media; Social network; Learning; Meta-analysis; Content analysis.

## **Eğitim Araştırmalarında Sosyal Medya & Öğrenme Çalışmaları Üzerine Bir Meta-Analiz**

Birgöl Kutlu<sup>1</sup>, Burç Çeken<sup>1</sup>, Meltem Mutlutürk<sup>1</sup>, Canan Türkmen<sup>2</sup>,

<sup>1</sup>Yönetim Bilişim Sistemleri Bölümü, Boğaziçi Üniversitesi, İstanbul, TÜRKİYE

<sup>2</sup>Matematik & Fen Bilimleri Eğitimi Bölümü, Boğaziçi Üniversitesi, İstanbul, TÜRKİYE

## **Özet**

Öğrenme için sosyal medya çalışmalarının odak noktasını ve bu çalışmaların nasıl yürütüldüğünü anlamak, bu alandaki araştırmaların hangi yönde ilerlediğini çözümlemek açısından oldukça önemlidir. Bu sebeple çalışma, hem sosyal medya hem de öğrenme üzerine odaklanan makaleleri inceleyip analiz etmeyi amaçlamıştır. Metodoloji olarak meta-analiz uygulanmış ve 2008 ile 2017 yılları arasında yayınlanan 152 makale içerik analizi ile incelenmiştir. Sonuçlar betimleyici istatistik ile yorumlanmış ve analiz sonucunda; (1) çalışmaların çoğunun Facebook, Twitter ve YouTube için öğrenmeyi içerdiği, (2) çalışmaların büyük bir çoğunluğunun öğrenciler üzerine yapıldığı, (3) anket kullanan kantitatif çalışmaların sıklıkta olduğu aynı zamanda temel araştırma yöntemi olarak vaka çalışmaları ve deneysel tasarım yöntemlerinin kullanıldığı, (4) çalışmaların odağında yüksek eğitimin görüldüğü, (5) literatüre en çok Avrupa'dan katkı sağlandığı ve (6) bu alandaki çalışmaların sayısında yıllar içerisinde artış olduğu gözlemlenmiştir.

## **Anahtar Kelimeler**

Sosyal medya; Sosyal ağ; Öğrenme; Meta-analiz; İçerik analizi.

## **1. Introduction**

Social media is a powerful tool and a driver of change in communication and collaboration. In the past few years, it has had a considerable impact in all aspects of life, from casual discourse to work-life. The shift from Web 1.0 to Web 2.0 is evident when we consider both the number of users and the amount of user engagement on social networks such as Facebook, Twitter, Instagram, Pinterest, Tumblr, LinkedIn, WhatsApp, and many others. For instance, every second around 500 million tweets are tweeted daily on Twitter and there are average 1.4 billion daily active users of Facebook. With the ever-increasing trend in social networks, it has found many uses in marketing, health services, tourism, entertainment, journalism, public relations. Therefore, it should come as no surprise that social media has been adopted for educational use.

There are plenty of websites and applications that respond to diverse needs of the users while making it difficult to come up with a clear and common usage of a term (Barnes & Lescault, 2012; McEwan, 2012). Hence, we see different terms appear in research, such as web 2.0, social media, and social network. These terms are used interchangeably, yet the distinction between them is not clear. Nevertheless, a general definition

of social media by Bryer and Zavattaro (2011) is given as “technologies that facilitate social interaction, make possible collaboration, and enable deliberation across stakeholders” (p. 327).

The study of Van Osch and Coursaris (2015) found that education and learning was the most popular topic used in social media research. As being the most popular topic, an in-depth analysis of the sub-topics, theories, approaches used within the scope of education is necessary.

Meta-analysis can help depict the current use of social media in educational settings for the purpose of learning among different countries and cultures as well as track the evolution of the use of social media and learning over time (Boulianne, 2015). A preliminary search of social media and learning producing no results led the authors to believe that meta-analysis of social media use within learning is limited to the best of authors’ knowledge.

This study employs a meta-analysis to assess the publications regarding the use of social media in educational settings between the years 2008 and 2017. The study aims to provide an overview of the current literature regarding this area and reveal the possible gaps in studies for future researchers. Through this study, researchers are aiming to answer six research questions given below:

- Which social media platforms are studied?
- What is the unit of analysis of the research?
- What are the method and the theory of the study that it is based on?
- Which education program and field do the studies refer to?
- Where are the studies contributed from?
- How are the studies distributed into a ten-year timeline?

## **2. Social Media & Learning**

Broadly defined, social media is any technological system associated with collaboration and community (Joosten, 2012). Although the ambiguity of definitions (Kaplan & Haenlein, 2010), social networking sites, blogs, wikis, virtual worlds are among the applications included in examples of social media (Tess, 2013). According to Bryer and Zavatarro (2001), social media technologies aid social interaction, collaboration, and discussion among collaborators. Social media technologies encompass blogs, wikis, all types of media sharing tools, networking environments and virtual worlds (Bryer & Zavatarro, 2001).

Social media concerns the collaboration between people with the aim of creating and sharing information, ideas, and media in virtual environments (Ahlqvist et al., 2008). Kaplan and Haenlein (2010) define social media as Web 2.0 based applications that enable user-generated content.

Social media could be identified with three core aspects; communication (discussion boards, microblogging, social networking), collaboration (wikis), and sharing (social bookmarking, blogs, podcasting, multimedia sharing) (Safran, 2010). Furthermore, in a more recent study of Friedman and Friedman (2013), social media is classified into five categories; communication, collaboration, community, creativity, and convergence. However, the study of Castro-Romero (2015) extended the work of Choi and Yang (2009). In his study, there are four categories that depict various aspects of social media; communication model, collaboration model, sharing model, and entertainment model (Table 1). The type of service that is associated with social media is given with some examples of websites and applications that fit into that type of social media.

Aside from its personal use, social media is also being used by students and faculty for educational purposes to enhance learning (Lenhart, et al., 2010; Tiryakioglu & Erzurum, 2011; Chen & Bryer, 2012). The scholarly use of social media has stemmed from the need for new ways to draw students’ attention and increase motivation. Social media technologies have also become an addition to traditional learning (Ebner et al., 2010). Social media as an educational tool has been receiving significant attention. The role of social media in the field of learning warrants thorough investigation (Tess, 2013).

Table 1. Classification of Social Media

Categories	Services	Websites
Communication Model	Blogging	Wordpress, Blogger
	Microblogging	Twitter, Me2day, Tumblr
	Social Networking	Facebook, LinkedIn, Ning, Cyworld, MySpace, Google+
	Event Networking	Meetup.com, Upcoming
	Instant Messaging	KakaoTalk, WhatsApp, Line, Viber
	Video-conferencing	Skype, GoogleHangout
Collaboration Model	Wikis	Pbworks, Evernote, Twiki
	Social bookmarking	Delicious, Scoop.it, Diigo, Pinterest, Stumbleupon, Digg, Flipboard, Readwrite
	Reviews & Opinions	Eopinions, City-data.com, Kindle.amazon
	Community, Q&A	Yahoo! Answers, Askville, Spring.me, Quora
Sharing Model	Photo	Flickr, Instagram
	Video	YouTube, Vimeo, Vine
	Livestreaming	Ustream.tv, Justin.tv
	Audio and Music	iTunes, Last.fm, Soundcloud
	Documents, Files, books, magazines	Scribd, Issuu, Slideshare, 4shared, Google Docs
Entertainment Model	Virtual Worlds	Second Life, The Sims
	Game Sharing & Play	Miniclip, Kongregated, Anipang, Candcrash

### 3. Method

In this study, a meta-analysis of literature on the use of social media in education was conducted. To obtain the necessary articles for analysis, the keywords “social media”, “social network” and “social networks” were entered into the Web of Science database. In order to obtain articles regarding social media use in an educational setting, the Web of Science categories were used to filter the results producing a total of 1658 peer-reviewed articles written in the English language within the years of 2008 to 2017. After eliminating 237 duplicates and 322 articles with no keywords, the number of articles left was 1099.

The authors then examined the abstracts of the resulting publications to eliminate those that were out of the scope of the study. While eliminating the articles, after individual analysis, 118 were analyzed together to measure the interrater reliability. The values of interrater reliability are given in Table 2.

Table 2. Interrater reliability for elimination of articles

<b>Coder 1</b>	-		
<b>Coder 2</b>	0,75	-	
<b>Coder 3</b>	0,81	0,85	-
	<b>Coder 1</b>	<b>Coder 2</b>	<b>Coder 3</b>

After the elimination phase, a total of 345 articles remained for full-text review. Among the 345 articles, 54 of the articles were randomly chosen for the authors to analyze together in order to gain a consensus on the categories of analysis. The interrater reliability then calculated for 54 articles coded by all of the authors and it is found as %85. Any differences were discussed, and necessary changes were made.

The full-text review of the articles led to the further elimination of 193 articles leaving 152 as the final sample. A form was created to extract the essential data needed for the study. The research question and the variables that were used to answer the research questions are presented in Table 3.

#### 3.1. Social Media

The categories in Table 1 are employed in the study. The Classification of Social Media (Choi & Yang, 2009; Castro-Romero, 2015) is used to code the websites and/or applications investigated in the study. If there were more than one website or application, all of them were noted hence the total number of websites/apps, services, and the category they contribute to is more than the actual number of articles.

*Table 3. Research questions and the corresponding variables*

Research Question	Variables
1 Which social media platforms are studied?	Website/App, Service, Category
2 What is the unit of analysis of the research?	Unit of Analysis
3. What are the method and the theory of the study that it is based on?	Methodology, Theory
4. Which education program and field are the studies refer to?	Education Program and Field
5. Where are the studies contributed from?	Affiliation, Country, Continent
6. How are the studies distributed into ten-year timeline?	Publication Year

### 3.2. Unit of Analysis

The studies were also coded based on their unit of analysis in order to understand the intended learning focus of the research. The unit of analysis is coded as participant, social media content and articles (Table 4).

*Table 4. Categorization of the Unit of Analysis*

Code	Unit of Analysis
P	Participant (Student, Teacher, Other)
SC	Social Media Content (Facebook post, tweet, video, blog post etc.
A	Article
NA	Not Applicable

### 3.3. Methodology & Theory

In the analysis, one of the aims is to understand how the studies are conducted when it comes to their chosen methodology. In order to systematically analyze the methods of the studies, the categories of different research methods are arranged as in Table 5.

*Table 5. Classification of Research Approach*

Research Approach	Specific Research Methodology
Qualitative Research	Action Research
	Case Study
	Content Analysis
	Field Research
	Narrative Research
Quantitative Research	Experimental Research
	Survey
Mixed Research	Mixed Research
Literature Review	Literature Review

### 3.4. Education Program & Education Field

The categories for educational level and field of education were obtained from the International Standard Classification of Education (UNESCO, 2011) to achieve an international common ground. The categories for

coding of education programs were further generalized after the coding process in order to decrease the number of codes. Table 6 presents both the categories for education program and field of education.

*Table 6. Classification of Education Program and Field of Education*

Code	Category	Education Program	Code	Field of Education
P1	Entry level	Early childhood education	F0	General Programs
		Primary education	F1	Education
		Lower secondary education	F2	Humanities and Arts
P2	Elementary level	Upper secondary education	F3	Social Sciences, Business, Law
		Post-secondary non-tertiary	F4	Science
		Short-cycle tertiary education	F5	Engineering, Manufacturing, and Construction
P3	Higher level	Bachelor's or equivalent level	F6	Agriculture
		Master's or equivalent level	F7	Health and Welfare
		Doctoral or equivalent level	F8	Services
P4	NA	Not elsewhere classified	F9	Not Known or Specified

#### 4. Analysis and Results

The results of the analysis of the 152 studies are given below according to the categories mentioned in the method section.

##### 4.1. Social Media Platforms

The articles were categorized as in Table 7. As can be understood from the table, nearly half of the studies were conducted using social networking services (48%). Some studies used more than one social media service making the total number of services higher than the total amount of articles.

*Table 7. Classification of social media platforms*

Categories	Frequency (N)	Services	Frequency (N)
Communication Model	144	Blogging	24
		Microblogging	36
		Social Networking	73
		Event Networking	0
		Instant Messaging	5
		Video-conferencing	6
Collaboration Model	16	Wikis	14
		Social bookmarking	2
		Reviews & Opinions	0
		Community, Q&A	0
Sharing Model	24	Photo	3
		Video	19
		Livestreaming	1
		Audio and Music	0
		Documents, Files, books, magazines	1
Entertainment Model	0	Virtual Worlds	0
		Game Sharing & Play	0
<b>Total</b>	<b>184</b>	<b>Total</b>	<b>184</b>

## 4.2. Unit of Analysis

People were the primary source of data in 134 out of 152 studies analyzed. With the high amount of survey and experimental design studies, this is plausible as the primary source of data in these approaches are usually people.

## 4.3. Methods & Theories

### 4.3.1. Method of the Study

As a result of the analysis, a survey method approach which is a quantitative method has been applied significantly within the studies (Figure 1 and Figure 2). This indicates that authors prefer to use quantitative methods to measure the effects of social media platforms on education. Qualitative data has also been used to supplement quantitative findings and used in a mixed methods approach.

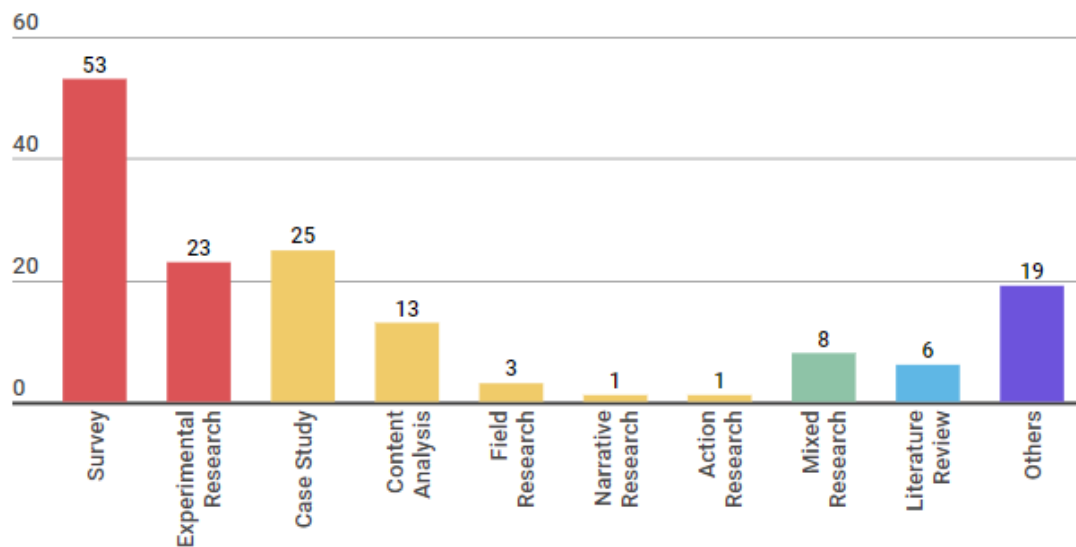


Figure 1. Distribution of research methods

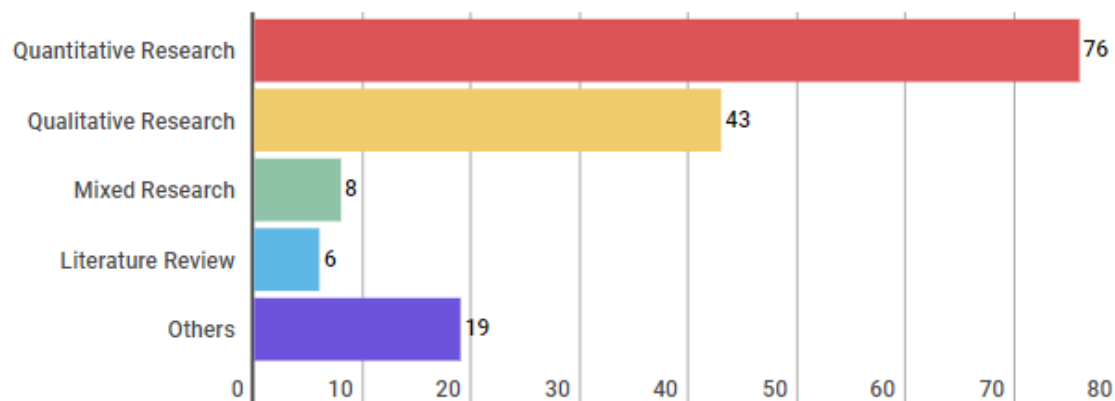


Figure 2. Distribution of research approaches

### 4.3.2. Theory of the Study

Out of the 155 articles only 17 of them were based on a theory. The technology acceptance model (TAM) and its derivatives were seen the most. These theories seem appropriate for social media since its usage is based on technology.

#### 4.4. Educational Program & Education Field

##### 4.4.1. Educational Program

64.47% of the studies have been conducted on higher education followed by elementary level education (10.53%). This is to be expected age wise, since the use of social media platforms is higher within these categories.

##### 4.4.2. Education Field

Figure 3 shows that other than the non-informative studies, the majority of studies have been conducted in the field of education and, health and welfare.

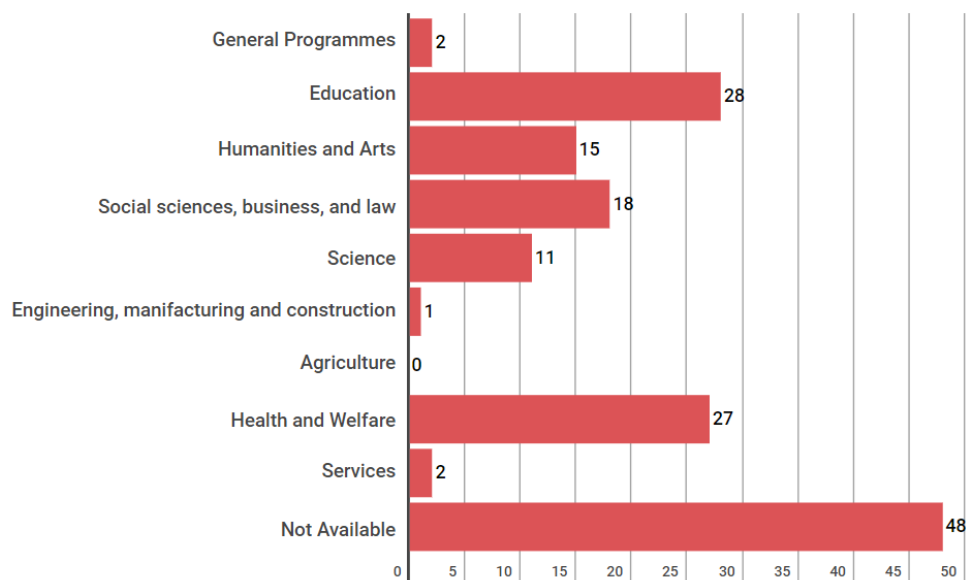


Figure 3. Distribution of field of education

#### 4.5. Affiliation & Collaboration

Continent wise, the most contribution has been from Europe (34.87%) followed by North America (28.95%) (Figure 4). USA has been the most contributing country to the literature with 49 articles followed by Australia with 15 articles and then Turkey with 10 articles.

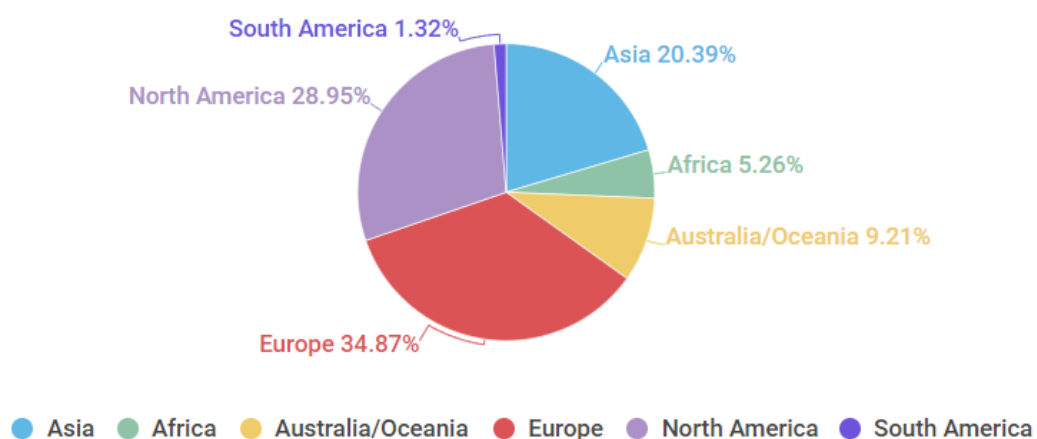


Figure 4. Pie chart of affiliations

#### 4.6. Publication Year

As can be seen from Figure 5, the number of studies conducted has significantly increased throughout the years. Especially between the years of 2015-2016, the number of studies has doubled.

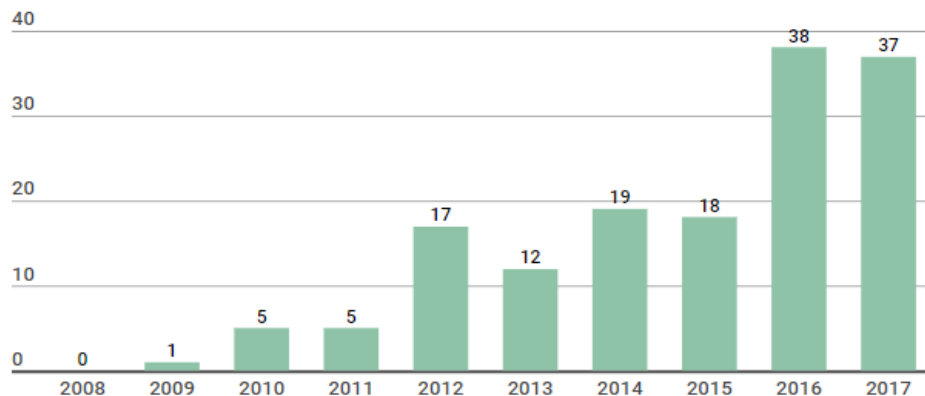


Figure 5. Number of articles throughout the years

### 5. Conclusion

#### 5.1. Most studies incorporate Facebook, Twitter, and YouTube for education

Websites and applications mainly serve as a communication model of social media. Facebook, Twitter, and YouTube being the most popular websites/applications, is not surprising because of the overall popularity of those indicated social media.

#### 5.2. The majority of studies are based on students

According to our finding the studies base their research on the analysis of participants, mainly students, followed by teachers and pre-service teachers. It is meaningful because the studies mainly focus on formal learning which has student and teacher in the center of the process. However, there are a few studies that focus on the content of the social media.

#### 5.3. Most studies adopted a quantitative approach using surveys, case studies and experimental designs as the primary means of research method

As seen in Figure 1, surveys have been the primary research method adopted followed by case studies and experimental designs. As experimental designs usually adopt surveys to measure the effects of the experiment, the use of surveys being high is normal.

#### 5.4. Most studies focus on higher education

The studies are focused on mostly learning in higher levels of education. The main reason for this inclination is the availability of social media websites and applications mostly for people above 18 years of age. Therefore, the social media research in learning leans towards higher education, informal learning, and adult learning.

#### 5.5. Europe contributed to the literature the most

The affiliation distribution of studies in social media and learning are in alignment with general social media research; Europe being the highest, followed by North America and Asia. Hence no anomalies have been discovered in this study.

#### 5.6. The number of studies is increasing throughout the years

The timeline of the studies shows that there is an increasing trend in the studies that focus both on social media and learning.

### 6. Limitations

This study has some limitations, the first being the database chosen. Web of Science was the only database used for this study; therefore, many studies that are published in other databases were automatically excluded.



Secondly, the country of the study was chosen as the country of the first author, which may have caused inaccuracy. Lastly, the categorizations of the articles were conducted by the authors of this study and reflect their consensus. Results may differ from author to author. This study should be taken into account in light of these limitations.

## Note

List of articles can be found at <https://goo.gl/4hzZhT>. The figures included in this paper can be reached through <https://goo.gl/gbMwbf>.

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