Academic Procrastination in Higher Education: A Meta-Analysis

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Abstract

Procrastination in academia is a problem. Students are one of the academic actors who are expected to meet the needs of the global community through the skills gained from higher education institutions, to change a country's achievement of the Human Development Index (HDI). This study aims to determine academic procrastination in higher education using the meta-analysis method. The search was conducted in the Scopus database published since 1989. A total of 73 articles with a sample of 30,070 students spread across universities in 10 countries with ownership of the main HDI achievements in the world. The results of the research on academic procrastination in universities showed up to 34 low-category articles, 28 medium-category articles, 8 high-ranking articles, and 3 very high-category articles. This inconsistent condition is caused by differences in regional, geographical, environmental, and cultural conditions formed in the society of each country in the sample. The article found no publication bias, while limitations and recommendations for further research were presented. Recommendations for future research examine more deeply the factors influencing the formation of different categorizations of academic procrastination at the levels of formal, non-formal, and informal education in general, as well as certain criteria.

INTRODUCTION

The United Nations Development Programme (UNDP) states that a country's human resources quality can be seen from indicators of intellectual quality, health quality, and standard of living (Ibadin & Eiya, 2020) The indicator then becomes a benchmark for each country's ranking of the Human Development Index (HDI). In 2020, UNDP reported that countries with the highest HDI ratings are dominated by countries located on the European Continent, while countries with the lowest HDI ratings are dominated by countries geographically located on the African Continent and parts of the Asian Continent. Educational institutions have an important role in creating human resources that have superior quality based on HDI indicators (Erlyn et al., 2022).

Various efforts are made by educational institutions, one of which is higher education, to achieve the expected goals. One of the missions of the university is to form people with ownership of skills, knowledge, and experience(Marulanda-Grisales & Vera-Acevedo, 2022). Giving assignments to students is one of the efforts to improve intellectual skills and abilities (Hwang et al., 2020). However, delays in the completion of academic assignments are often encountered and become a problem(Yupanqui-Lorenzo et al., 2023). Various causes of student procrastinating include feeling difficulty in doing coursework (Bytamar et al., 2020), unable to manage time properly (Cho & Lee, 2022), and high fear of failure (Serra Ağirakça-Dinç & Halil Ekşi, 2019), fatigue with learning materials. In addition to Kuftyak, (2022) and Ma et al. (2022) stated that 70% of students feel stressed about excessive assignments, so students choose to do other activities that are considered more fun.

The Centers for Disease Control (CDC) reported that from 2014 to 2015, the suicide rate of students at one college in the Americas surpassed the national average, about 13 deaths each year. In addition, according to the CDC, in 2022, almost 45% of students experienced feelings of sadness and hopelessness, especially during the pandemic, especially as many as 20% of students had serious intentions to commit

suicide. If we know in detail about the effects and patterns of academic procrastination, we can intervene to reduce this behavior. Therefore, this issue is important because it also affects the welfare of students' psychological conditions by knowing the sources and ways to reduce academic procrastination through programs and curricula designed by universities. In addition, this condition directly affects the achievement of higher education Key Performance Indicators (IKU), which reflect the quality of institutions in providing education. This step is also aligned with an effort to help students to reduce this behavior.

Previous studies on academic procrastination need to be more consistent in results. Research by Touloupis and Campbell (2024) shows that students tend to try to suppress academic procrastination attitudes, while Sepiadou & Metallidou (2023) convey that academic procrastination attitudes in students become higher if students with a sense that academic tasks are challenging with a high gap between their standards and achievements. In another case with Ashraf et al. (2023), it was found that there were no significant differences based on sex in their research. However, perfectionism had a significant effect on academic procrastination, while self-efficacy did not have a significant effect. However, the results of other studies show that sex differences also have different results on women's fear of failure higher than men, which is one of the causes of academic procrastination (Sepiadou & Metallidou, 2023)

In previous research on academic procrastination in universities, no one has used the meta-analysis method, so this study offers novelty in the use of research methods that have not existed in previous studies. Therefore, this research using meta-analysis research methods is expected to contribute to research on academic procrastination in universities.

Based on the statement above, the purpose of this study is a summary of the results of previous research on academic procrastination in universities published since 1989 has examined academic procrastination carried out by students in various universities, both developed and developing countries, by conducting tests using meta-analysis methods. To be able to answer the formulation of research questions: 1) what is the condition of academic procrastination in universities if studied using meta-analysis? Moreover, 2) how is academic procrastination in universities in various countries ranked 11 and below based on HDI achievements?

METHODS

A. Systematic search and selection of studies

Data collection with several stages, namely:

1. Article search steps,
2. Screening stage, and
3. Data analysis by: a) heterogeneity test by looking at the residual value test results, to determine the similarity of research used b) publication bias test by looking at egger value and rank correlation, which aims to determine biased publications (c) testing effect size through forest plot (Aktamis et al., 2016), aims to calculate effect size or measure how much impact or significant influence of one variable on other variables, (d) describe the forest plot and funnel plot, and (e) test the hypothesis. All analyses use JASP 0.18.1.0 software. Effect sizes were categorized according to (Cohen, 1988) based on the following Table 1:

Table 1. Effect size classification

Value	Category
10,0-30,0	Low
31,0-60,0	Medium
61,0-90,0	High
>91,0	Very high

B. Inclusion and exclusion criteria

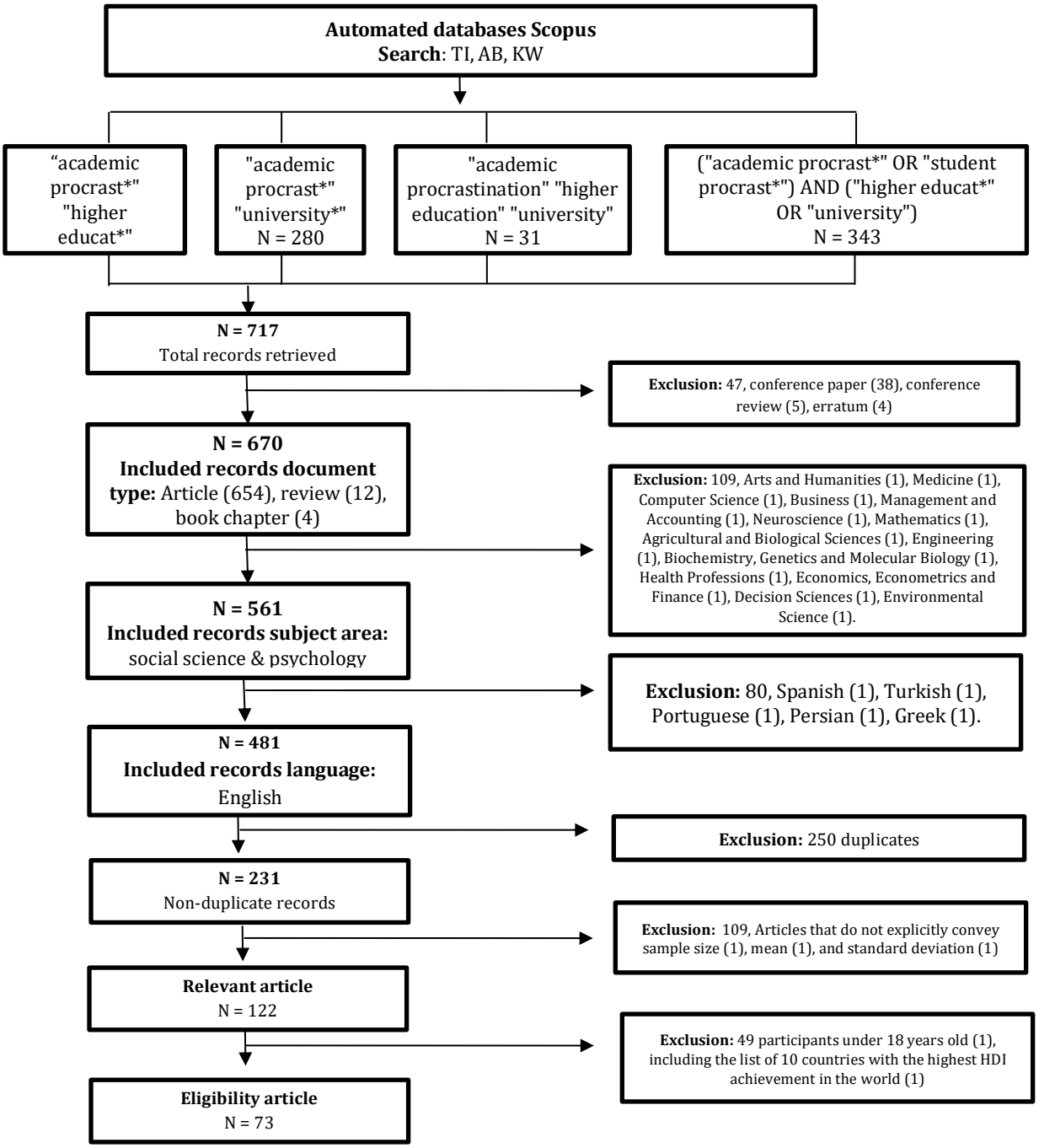


Figure 1. Article search process flowchart

Based on the research question and following an adaptation of the PICO strategy, a protocol called "d-Cocospe" (documents, concept, context, studies, participants, and evaluation) as follows: (see Table 2).

Table 2. Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Documents (d)	Journal articles, books, book chapters, and doctoral theses	Magazine articles, editorials, conferences, etc.
Concept (Co)	Academic procrastination	The rest
Context (Co)	Academic procrastination context	Other contexts (e.g., general procrastination, and except higher education were excluded)

Studies (s)	Empirical studies	Theoretical reviews and case studies
Participants (p)	Students reported as students in higher education	university students enrolled in the 10 countries with the highest HDI achievement in the World.
Evaluation (e)	Academic procrastination measures (i.e., sample size, standard deviation, and mean)	Single-item or unstructured instruments do not have a sample size, standard deviation, or mean.

The search is performed from the Scopus database by applying Boolean operators (AND & OR) and truncation (* and reverse comma) in TI, AB, KW: ("academic procrast*" "higher educat*"), ("academic procrast*" "university"), ("academic procrastination" "higher education" "university"), and ("academic procrast*" OR "student procrast*") AND ("higher educat*" OR "university") publications from 1989 to February 2024. The search was conducted on February 17, 2024, and preliminary results were obtained from as many as 717 articles; then, article screening was carried out until 73 articles met the criteria for data processing using meta-analysis. The visualization of the article search process can be seen in Figure 1.

RESULTS AND DISCUSSION

A. Result

The final search results obtained 73 articles with a total of 30,070 subjects. The sample size of each article varied between 13 and 2,666 participants, and the sample's age was between 12 and 67 years of 73 articles dominated by Turkey as the object of research as many as 15 articles, followed by the USA as many as 8 articles and Indonesia as many as 6 articles.

Table 3. Variables of academic procrastination in college are included

Study	Sample size	Mean	SD	SE	Age	Country
Xiao et al., 2024	750	19,190	1,280	0,047	16–24	Beijing
Touloupis & Campbell, 2024	115	19,700	0,890	0,083	19–20	Greece/Yunani
Elemo & Dule, 2023	141	13,100	4,500	0,379	24–53	Ethiopia
Ergulec et al., 2023	396	94,310	27,710	1,392	17–22	Turkey
Ashraf et al., 2023	370	50,724	0,856	0,045	20–35	Pakistan
Martinie et al., 2023	249	4,050	1,280	0,081		Prance
Hidayat & Hasim, 2023	100	45,150	8,160	0,816	19–23	Indonesia
Kharrazi & Ghanizadeh, 2023)	203	67,110	21,190	1,487	18–45	Iran
Martín-Antón et al., 2024	344	18,090	4,310	0,232		Spanish
Winarso et al., 2023	155	6,921	2,807	0,225	18–20	Indonesia
Subekti, 2023	164	25,540	7,750	0,605	16–22	Indonesia
Xhakolli & Hamzallari, 2023	458	3,060	1,250	0,058		Albania
Mastrantonio et al., 2023	359	2,665	0,419	0,022	18–30	Spanish
Gadosey et al., 2023	416	8,030	2,690	0,132	15–18	Philippines
Oram et al., 2022	712	3,000	0,780	0,029	18–25	Canada
Vilca, 2022	106	27,700	7,200	0,699	18–30	Peru
Martín-Antón et al., 2022	724	50,410	7,870	0,292	18–56	Spanish
Esteban et al., 2023	2249	26,160	6,960	0,147	16–38	Peru
Niazov et al., 2022	173	11,605	2,213	0,168		Israel
Margaretha et al., 2022	732	51,648	14,490	0,536	17–22	Indonesia
Argiropoulou et al., 2022	865	53,890	11,890	0,404	19–60	Greece/Yunani
Fentaw et al., 2022	323	42,180	4,840	0,269	17–28	Ethiopia
Türel & Dokumaci, 2022	1278	45,748	14,888	0,416	12–16	Turkey
Bozgun & Baytemir, 2021	252	19,910	6,180	0,389	18–33	Turkey
Patria & Laili, 2021	20	62,000	9,210	2,059		Indonesia

Mousavi & Ketabi, 2021	50	4,140	56,000	7,920	20–24	Iran
da Rocha et al., 2021	2666	35,900	9,000	0,174	18–67	Brazil
Saman & Wirawan, 2021	1670	114,740	15,570	0,381	17–24	Indonesia
Dunn & Hayakawa, 2021	132	21,180	3,800	0,331	21–71	USA
Limone et al., 2020	450	23,200	8,790	0,414	16–64	Italy
Shahab & Adil, 2020	250	76,630	14,660	0,927	18–27	Pakistan
Kınık & Odacı, 2020	862	31,310	134,890	4,594	17–40	Turkey
Durak, 2020	171	40,790	13,680	1,046		Turkey
Abuhmaid & Abood, 2020	80	6,230	0,771	0,086		Jordan
Litvinova et al., 2020	95	67,670	5,370	0,551		Rusia
Zasiekina & Zhuravlova, 2019	82	52,670	1,520	0,168		African
Çebi et al., 2019	571	54,070	15,250	0,638		Turkey
Dominguez-Lara et al., 2019	986	39,320	7,338	0,234	16–40	Peru
Ljubin-Golub et al., 2019	274	3,260	1,090	0,066	19–35	Croatia
Fukuda et al., 2019	55	2,720	0,710	0,096	18–25	Japan
Birol & Günal, 2019	426	56,700	13,570	0,657		Turkey
Kljajic & Gaudreau, 2018	208	5,350	2,190	0,152	17–37	Canada
Çelik & Odacı, 2018	18	66,170	6,410	1,511	19–25	Turkey
Codina et al., 2018	675	10,680	2,630	0,101		Spanish
Hen, 2018	335	17,830	5,146	0,281	19–45	Israel
Tani, 2017	80	72,210	19,490	2,179		New Zealand
Ghosh & Roy, 2017	150	40,070	15,335	1,252	18–23	India
Gagnon et al., 2016	392	29,670	8,820	0,445	18–63	Canada
Toker & Avcı, 2015	13	59,920	13,460	3,733	19–24	Turkey
Karataş, 2015	475	42,080	6,840	0,314		Turkey
Glick & Orsillo, 2015	118	33,140	7,640	0,703	12–51	USA
Balkıs, 2011	364	35,720	9,720	0,509	18–27	Turkey
Strunk & Steele, 2011	138	2,870	0,610	0,052	18–49	USA
Odaci, 2011	398	54,230	11,270	0,565	18–28	Turkey
Faruk, 2011	774	55,420	10,470	0,376	17–27	Turkey
Rabin et al., 2011	212	60,600	9,090	0,624		USA
Iskender, 2011	251	51,510	5,750	0,363	17-26	Turkey
Klassen et al., 2010	418	36,440	7,480	0,366		Canada & Singapore
Rakes & Dunn, 2010	81	55,680	16,830	1,870	21–57	USA
Morales, 2010	250	6,500	1,490	0,094		Philippines
Bui, 2007	72	11,925	5,420	0,639	18–46	Southern California
Alexander & Onwuegbuzie, 2007	116	32,020	6,820	0,633	22–55	USA
Akinsola et al., 2007	150	56,050	10,000	0,816	20–36	Nigeria
Lee, 2005	277	2,780	0,520	0,031	18–24	South Korea
Onwuegbuzie, 2004	135	8,390	1,650	0,142	21–51	USA
Senécal et al., 2003	295	6,330	1,730	0,101		Prance & Canada
Day et al., 2000	242	10,600	4,000	0,257		Canada
Milgram et al., 1998	52	15,560	3,870	0,537		Israel
Bridges & Roig', 1997	195	152,985	13,420	0,961	17–51	USA
Saddler & Sacks, 1993	150	70,930	16,975	1,386		Southern California
Güdül et al., 2021	1770	38,167	11,500	0,273		Turkey

Zibenberg & Pearlman-Avnion, 2020	290	6,080	1,380	0,081		Israel
Khurshid & Batool, 2018	502	33,480	10,050	0,449	22–24	Pakistan

In Table 4, the Q value in the Omnibus test is 112,801 with a p-value of <0.001 where p<0.05. This shows that the sample meets the assumption of heterogeneity in the study. After passing the sample heterogeneity test, the next step uses a random effect approach to summarize the effect size estimation and publication bias.

Table 4. Fixed and Random Effects

	Q	df	p
Omnibus test of Model Coefficients	112.801	1	< .001
Test of Residual Heterogeneity	$1.550 \times 10^{+6}$	72	< .001

Table 5. Rank correlation test for Funnel plot asymmetry

	Kendall's τ	p
Rank test	0.126	0.116

Table 6. Regression test for Funnel plot asymmetry ("Egger's test")

	z	p
sei	1.626	0.104

Table 5 and Table 6 are the results of the publication bias test. Both the Egger test and the Rank correlation test for asymmetry of the Funnel plot were able to test whether these studies could be combined. The Kendal value is 0.126 in Table 5, with a p-value of 0.116 greater than 0.05. Then, the Z value in Table 6 is 1.626 with a p-value of 0.104 greater than 0.05. Therefore, there is no publication bias in the sample. A trim-fill diagnostic analysis on the funnel plot supports this result. The funnel plot or funnel plot in Figure 2 with a trim-fill analysis approach does not carry out the treatment of adding blank dots (hollow points). So it can be interpreted that the article does not match the collection of other studies. Figure 2 shows no publication bias, which then shows the phenomenon of academic procrastination in universities. This condition can also be seen in the forest plot shown in Figure 3 as follows:

Figure 3 forest plot using trim-fill analysis approach. The forest plot depicts a vertical line surrounded by black squares around it. The position of the black box closer to the vertical line indicates that the article in a particular study is insignificant or there is no phenomenon.

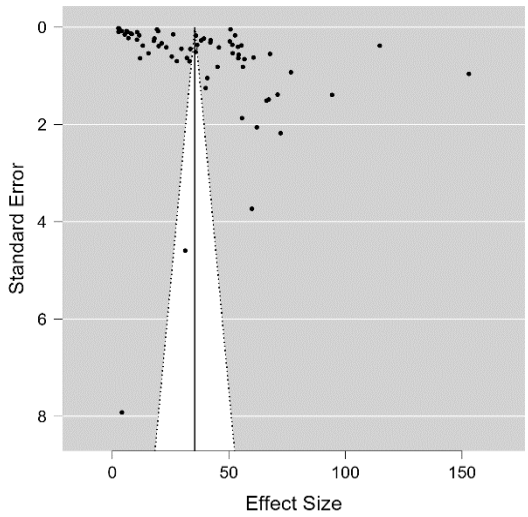


Figure 2. Funnel plot

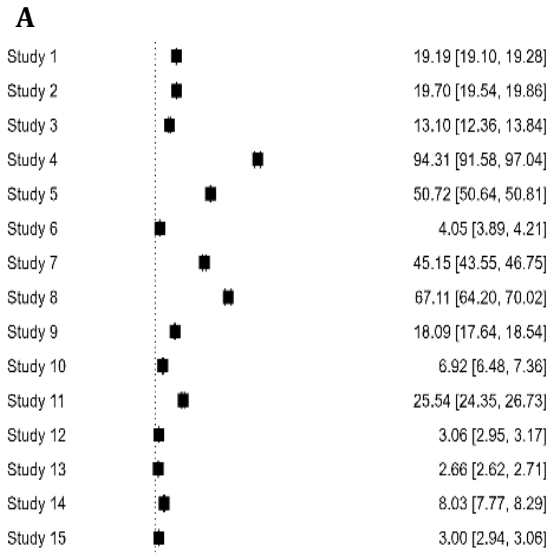
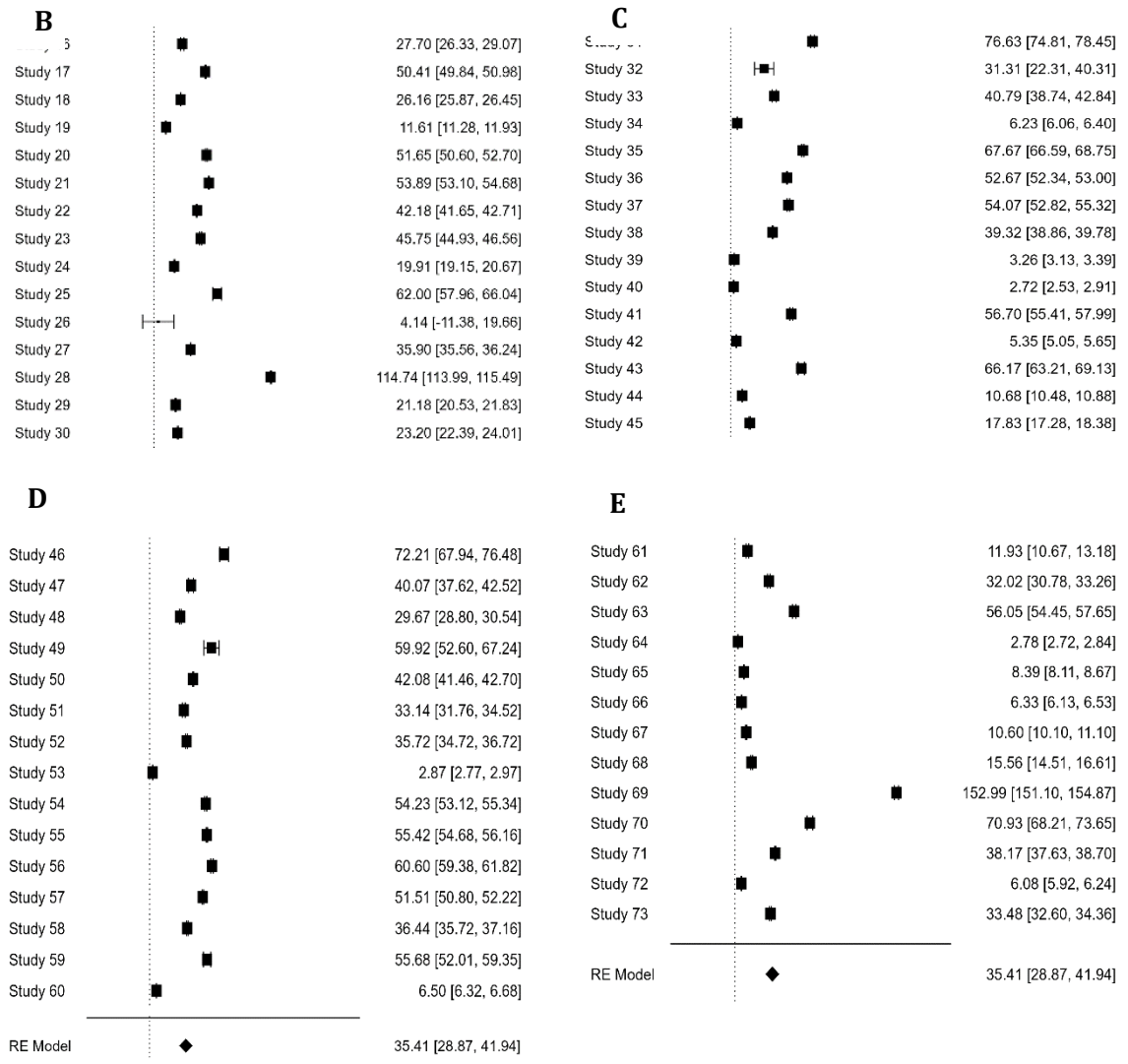


Figure 3. Forest Plot (Effect size 95%)



This conclusion becomes the strength of P-value analysis for hypothesis testing. Ho's hypothesis states that there is no phenomenon of academic procrastination in universities. Ha's hypothesis states the existence of the phenomenon of academic procrastination in universities. Based on the average, it can be concluded that from the seventy-three articles above there is a phenomenon of academic procrastination in university students amounting to 35.41 with an error range of 28.87–41.94 and with varied in magnitude from 2.66 to 152.99. These data show that there is a phenomenon of academic procrastination among students in universities with moderate categories (Cohen, 1988).

B. Discussion

After a systematic search process related to the topic raised, 73 articles were obtained with a combined sample of 30,070 students for analysis using the meta-analysis method. All articles were analyzed and showed the phenomenon of academic procrastination carried out by students in the age range of 12 – 67 years with populations other than students enrolled in universities in 10 countries with top 10 HDI achievements, namely in addition to countries Norway (Europe), Ireland (Europe), Switzerland (Europe), Hong Kong (Europe), Iceland (Europe), Germany (Europe), Sweden (Europe), Australia (Europe), Netherlands (Europe), and Denmark (Europe).

The analysis results found that some students need more time with low categories, as many as 34 articles. Students carry out academic procrastination with as many as 28 articles in medium categories, 8 articles in high categories, and 3 articles that have research results in very high categories regarding academic procrastination carried out by students. The details are as follows:

Table 7. Categories of academic procrastination levels in college

Study	Age	Country	Condition	Study	Age	Country	Condition
1	16–24	Beijing	Low	38	16–40	Peru	Medium
2	19–20	Greece/Yunani	Low	39	19–35	Croatia	Low
3	24–53	Ethiopia	Low	40	18–25	Japan	Low
4	17–22	Turkey	Over high	41		Turkey	Medium
5	20–35	Pakistan	Medium	42	17–37	Canada	Low
6		Prance	Low	43	19–25	Turkey	High
7	19–23	Indonesia	Medium	44		Spanish	Low
8	18–45	Iran	High	45	19–45	Israel	Low
9		Spanish	Low	46		New Zealand	High
10	18–20	Indonesia	Low	47	18–23	India	Medium
11	16–22	Indonesia	Low	48	18–63	Canada	Low
12		Albania	Low	49	19–24	Turkey	Medium
13	18–30	Spanish	Low	50		Turkey	Medium
14	15–18	Philippines	Low	51	12–51	USA	Medium
15	18–25	Canada	Low	52	18–27	Turkey	Medium
16	18–30	Peru	Low	53	18–49	USA	Low
17	18–56	Spanish	Medium	54	18–28	Turkey	Medium
18	16–38	Peru	Low	55	17–27	Turkey	Medium
19		Israel	Low	56		USA	High
20	17–22	Indonesia	Medium	57	17–26	Turkey	Medium
21	19–60	Greece/Yunani	Medium	58		Canada & Singapore	Medium
22	17–28	Ethiopia	Medium	59	21–57	USA	Medium
23	12–16	Turkey	Medium	60		Philippines	Low
24	18–33	Turkey	Low	61	18–46	Southern California	Low
25		Indonesia	High	62	22–55	USA	Medium
26	20–24	Iran	Low	63	20–36	Nigeria	Medium
27	18–67	Brazil	Medium	64	18–24	South Korea	Low
28	17–24	Indonesia	Over high	65	21–51	USA	Low
29	21–71	USA	Low	66		Prance & Canada	Low
30	16–64	Italy	Low	67		Canada	Low
31	18–27	Pakistan	High	68		Israel	Low
32	17–40	Turkey	Medium	69	17–51	USA	Over high
33		Turkey	Medium	70		Southern California	High
34		Jordan	Low	71		Turkey	Medium
35		Rusia	High	72		Israel	Low
36		African	Medium	73	22–24	Pakistan	Medium
37		Turkey	Medium				

Procrastination in the academic sphere by students as procrastinators has negative psychological impacts, such as anxiety, stress, and even depression (Dardara & Al-Makhalid, 2022). If this condition is left unchecked, it will certainly inhibit and further endanger the psychic condition of the procrastinator.

The age of the samples tested in the study has a different range, which is one of the causes of the results of different academic procrastination conditions (Hidalgo-Fuentes et al., 2022). This can be seen in articles dominated by research objects in Turkey. A total of 15 articles were conducted in Turkey, but

only 1 each showed the results of low academic procrastination and high and very high conditions. At the same time, the results of the other 12 articles obtained the results of the dominance of the medium category (Klassen & Kuzucu, 2009), i.e., with a size effect range of 31.0–60.0. This condition represents that the level of academic procrastination carried out by students in Turkey tends to be in the medium category. Another case with articles that determine the USA as the subject country of research, obtained the results of 3 articles each on academic procrastination in USA students with low and medium categories (Prohaska et al., 2000), 1 article each with high conditions and very high occurrence of academic procrastination. Meanwhile, in 6 articles conducted by research in Indonesia, it was concluded that academic procrastination in students in Indonesia with simple and low categories was 2 articles each, and the remaining 1 article each with high and very high categories.

Therefore, it was concluded that there was academic procrastination in students (samples other than the top 10 countries achieving HDI in the world) with a moderate category of 35.41. The difference in research results can mean that each student in a country has different characteristics and cultures that contribute to shaping academic procrastination attitudes in students with different categorizations. Differences in the region and geographical, environmental, and cultural conditions formed in the society of each country are some of the factors that affect the level of procrastination attitudes in students.

Although the results of this study are reliable, they have limitations. The next study can help clarify and examine more deeply the factors that influence the characteristics of differences in academic procrastination attitudes of students in each country, either as a whole without restrictions or with the setting of research limits. The study of academic procrastination in students in the top 10 countries of HDI achievement is also an interesting topic to be studied so that it can be known the factors and efforts that become the habits of countries with the top HDI achievements in the world in minimizing academic procrastination attitudes in their students. In addition, academic procrastination at every level of education, both formal, informal, and non-formal education, is also one of the next research recommendations.

CONCLUSIONS AND SUGGESTIONS

A. Conclusion

Procrastination in academics hurts procrastinators. This meta-analysis showed that 73 articles with a sample of 30,070 students spread apart from universities in 10 countries with ownership of top HDI achievements had different levels of academic procrastination. A total of 34 articles showed a low category related to academic procrastination in students, then 28 articles with a medium category, 8 articles with a high category, and 3 articles stating that students carried out academic procrastination with a very high category. This inconsistent condition is due to differences in region and geographical, environmental, and cultural conditions formed in the society of each sample country.

B. Suggestion

The recommendations for the next study are to examine more deeply the factors that influence the formation of differences in the categorization of academic procrastination at the formal, non-formal, and informal education levels.

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