The Impact of Decree Laws on the Performance of Turkish Academic Family Physicians: A Repeated Cross-sectional Study

Running Head
Turkish academic family medicine before and after 2016

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Abstract

Objectives: This study aimed to identify personal losses of the dismissed family medicine academics and the four-year impact of the purge to the general scientific production of Turkish academic family physicians following the decree laws in 2016.

Methods: A repeated cross-sectional study was conducted covering the time before 2008, 2009-2012, 2013-2016, and 2017-2020. All actively-working assistant, associate, and full professors of family medicine in Turkey as of 14th July 2016 and recently hired academic staff after the coup attempt in 2016 were included in the study. The primary outcome variable of the study was the total number of publications listed in Google Scholar.

Results: Data of 212 academics were analyzed. Of the participants, 23 (10.8%) were dismissed with the decree laws after the 2016 coup attempt, while 25 assistant professors were hired later. It was observed that the mean number of publications increased until 2016, followed by a decrease of 26.1% from 2013-2016 to 2017-2020. Further analysis of the data demonstrated a significant decline in the number of publications of the purged as well as non-purged individuals after 2016 ($p<0.001$). Although the purged academics were having relatively higher performance indicators in the previous years, they experienced a 48.8% loss (18.1% vs. 35.4%) in the number of publications after 2016 compared with their peers ($p<0.05$).

Conclusion: The decree laws had impacts on the dismissed academic family physicians as well as the general family medicine academy as a whole. Mechanisms are needed to avoid interference of political processes with the science population.

Keywords: Indexes; Crisis Intervention; Academic Performance; Academic Achievement; Political Factors

Introduction

Background/rationale

Turkey experienced a failed coup attempt on the 15th July 2016. Starting one week after the coup attempt, decree laws were issued to dismiss state employees [1]. Until November 2019, 559 064 people underwent some procedural acts [2]. A striking feature of these people is their educational levels; around 99% have some university degree [3]. The total number of expelled state employees is reported as 125 678 [4], of which 7 236 were academic staff and 1 148 were academic staff at medical schools.

Science productivity is considered as an indicator of development. Turkey had an increasing trend in citation share until 2009 [5]. The numbers as well as quality of scientific publications have increased over the years. However, although Turkey increased its research and development expenditure from 0.54 percent of gross domestic product (GDP) in 2001 to 0.86 percent in 2011, this amount is still behind the developed countries [6]. On the other hand, both the total number of publications (from 39 047 to 35 547, 8.9% decline) and total number of articles (from 30 501 to 28 714, 5.8% decline) addressed from Turkey decreased the year after the coup attempt in July 2016 [7]. Given the approximately 6.5% increasing trend of the publications in the previous years, this decline deserves attention.

Around 200 family medicine academics were employed in Turkey before the coup attempt [8]. In this study, we decided to investigate the repercussions of the decree laws on academic family medicine in more detail. We hypothesized that the number of dismissed family medicine academics is proportional to the total number of dismissals. Despite the immediate academic losses with the decree laws, new positions were opened and filled with young, and, thus, less experienced staff. Furthermore, the purged academics were not allowed to re-apply to official posts. As expected, the effects of this purge was seen in the private sector as well with weight given on non-expelled personnel [9,10].

Objectives

This study aimed to describe the academic losses resulting from the Turkish purge [11] and associated dismissals with the decree laws following the failed coup attempt in 2016. Two primary objectives of the study were to identify the personal losses of the dismissed family medicine academics and to investigate the four-year impact of the purge to the general scientific production of Turkish academic family physicians.

Methods

Study Design

A repeated cross-sectional study was conducted. Since the study subjects were anonymized and data collection was based on public-domain sources, no ethical board approval was deemed necessary. Study reporting was done per the STROBE statement [12].

Participants

All actively-working assistant, associate, and full professors of family medicine in Turkey as of 14th July 2016 and recently hired academic staff after the coup attempt in 2016 were included in the study. The list of purged participants was obtained by reviewing the 31 decree laws published during the emergency state period [13]. The majority of dismissals took place within the three months after the coup attempt. Only one assistant professor was expelled on April 2020. The list of the actively working academic staff as of August 2020 was obtained manually by reviewing the websites of the 76 academic family medicine institutions in Turkey. One professor was excluded because he retired during the study period.

Variables

The primary outcome variable of the study was the total number of publications listed in Google Scholar. Data collection was done during August 2020. Google Scholar search terms included the following format: "Name Surname". Data collection was done covering the time before 2008, 2009-2012, 2013-2016, and 2017-2020.

In case of multiple authors with the same name, the number of articles were manually counted by paying attention to the institutions and type of articles. Other variables included were age, sex (M/F), institute type (public/private), purge status (yes/no), academic title during the purge (assistant/associate/full prof.), hired after the purge (yes/no), H-index, and i10 index. Sex categorization was based on external appearance in the profile pictures plus names.

Bias

Publications were evaluated in four-year intervals. However, the publication process of an article takes an average of four months from the date of submission to the journal [14]. Although articles published during the second half of the year 2016 after the coup attempt were considered as scientific work submitted earlier, we can't confirm this assumption. All retrieved articles were double-checked visually by two authors for relevance to prevent similarities in author names. Women authors were checked for any change in the names after marriage.

Study Size

A post-hoc sample size calculation was performed using the main outcome variable 'total number of publications.' To compare the three groups using the one-way ANOVA, a total sample size of 204 participants is required to make a comparison with an alpha error of 5%, an effect size of 0.22 (medium), and a power of 80% [15].

Statistical Methods

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0 software (SPSS Inc., Chicago, IL, USA). The results were presented as frequencies, percentages, means, and standard deviations (SD). The Kolmogorov–Smirnov test was performed to test if the numerical variables were normally distributed. The Kruskal-Wallis test was applied to compare numerical variables between the three groups. The Mann-Whitney U test was used to compare numerical variables between two groups, and the Chi-Square test was used for categorical variables. The Friedman test was applied to check for significant changes of the number of publications over time. Comparisons between two time points were made by the Wilcoxon test. A p-value of <0.05 was considered as statistically significant.

Results

Participants

Data of 212 academic staff from 75 institutions were analyzed. Of the participants, 23 (10.8%) were dismissed with the decree laws after the 2016 coup attempt. On the other hand, 25 assistant professors (11.8%) were hired after the aforementioned incident.

Eighteen of the institutions (8.5%) were private, while 194 (91.5%) were public-origin. Gender distributions within the study were 44.8% females (n=95) and 55.2% (n=117) males. The mean age (±SD) of the participants was 47.89±6.68 years, ranging from 32 to 64 years.

Descriptive findings

It was observed that the mean number of publications increased until 2016, followed by a decrease of 26.1% from 2013-2016 to 2017-2020. Table 1 describes a summary of academic performances of all participants. Citation information were available for 74 academics. Concerning the H-indexes, only 4 (5.4%) were 20 or above. Also, 10 participants (13.5%) had i10 indexes of 20 or above. Only four participants (5.4%) had i10 indexes of 40 and above. On the other hand, while there was one scholar with 4653 citations, most participants had less than 1000 total citations. Only 13 scholars (17.5%) had a total of 1000 citations or more.

Table 1: Descriptive presentation of the academic performances of all participants (N=212)

	Mean	SD	Median	Min.	Max.
Total number of citations	539.68	723.61	302	1	4653
H-index	9.41	5.38	9	1	26
i10-index	10.76	11.58	8	0	57
Publications before 2008	19.66	33.80	4	0	194
Publications between 2009-2012	31.12	58.10	8	0	280
Publications between 2013-2016	41.92	62.11	19	0	364
Publications between 2017-2020	30.88	42.01	15	0	277
Total number of publications	123.59	185.58	52	1	902

Outcomes

The proportion of dismissed male academics was significantly higher compared to the female counterparts. Also, all academics hired after 2016 were titled as assistant professors, and they all were hired by public institutions (Table 2). All three academics from private universities lost their job because their institutions were closed by decree laws.

Table 2: Baseline characteristics of the participants compared between the groups (N=212)

		Hired before 2016-Purged	Hired before 2016-not purged	Hired after 2016	χ^2	p
Sex	Female	2_a	79_b	14_b	14.144	0.001
		8.7%	48.2%	56.0%		
	Male	21_a	85_b	11_b		
		91.3%	51.8%	44.0%		
Title	Assistant Professor	9_a	59_a	25_b	36.359	<0.001
		39.1%	36.0%	100.0%		
	Associate Professor	9_a	66_a	0_b		
		39.1%	40.2%	0.0%		
	Full Professor	5_a	39_a	0_b		
		21.7%	23.8%	0.0%		
Institute Category	Public	20_a	150_a	25_a	3.006^*	0.191
		87.0%	91.5%	100.0%		
	Private	3_a	14_a	0_a		
		13.0%	8.5%	0.0%		

*Fisher's exact test. Each subscript letter denotes a subset of Group categories whose column proportions do not differ significantly from each other at the 0.05 level.

The median values of total number of citations, H-index, i10-index, number of publications before 2008, number of publications between 2009-2012, number of publications between 2013-2016, number of publications between 2017-2020, and total number of publications were significantly different between the three groups (Kruskal Wallis Z and p values 15.688,<0.001; 11.417, 0.003; 13.306, 0.001; 24.957, <0.001; 40.715, <0.001; 38.089, <0.001; 28.990, <0.001; and 33.570, <0.001, respectively).

While there was a gradual increase in academic performance markers until 2016, a decline was observed afterwards in the all groups, excluding the recently hired academics. Also, except for the 2017-2020 period, the purged academics had the highest indices compared to the other groups (Figure 1). On the other hand, although the purged academics were having relatively higher performance indicators in the previous years, they experienced a 48.8% loss (18.1 vs. 35.4) in the number of publications after 2016 compared with their peers.

Furthermore, low academic performance indices were observed in the recently hired academics. Their mean number of citations was 3.8. There was even one individual with only one publication.
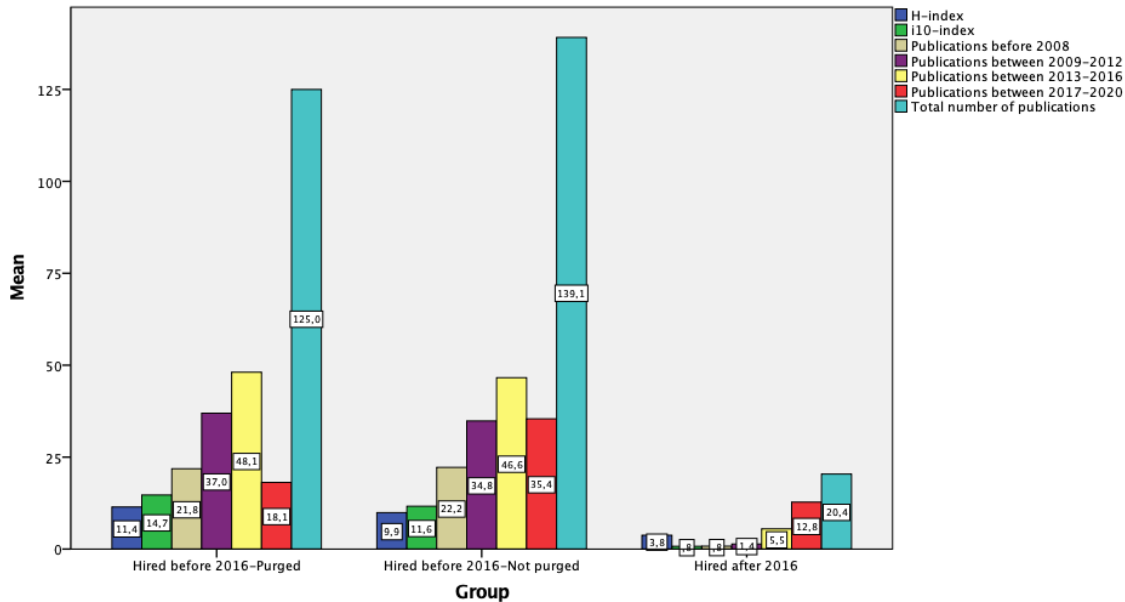

Figure 1: Comparison of the mean academic performance scores between the groups (N=212)

Comparison of the repeated measures on 209-2012, 2013-2016, and 207-2020 demonstrated a significant change in the total number of publications over time (Friedman Test Chi-Square=70.594, p<0.001) (Figure 3).

Although compared to the non-purged peers, the purged individuals had relatively higher number of publications in the 2009-2012 and 2013-2016 periods, this difference was not significant (Mann-Whitney U Z, p 0.340, 0.734 and 1.018, 0.308, respectively). However, the decline in these two groups after 2016 was more remarkable in the purged group (Mann-Whitney U Z=4.500, p<0.001). Further analysis of the data demonstrated a significant decline in the number of publications of the purged as well as non-purged individuals after 2016 (Wilcoxon Z, p 4.198, <0.001 and 3.520, <0.001, respectively), which was more prominent in the dismissed group (Figure 2).

Furthermore, the change in the number of publications over time was significant after splitting the file into three groups. While there was a decrease after an initial increase in the purged and non-purged group (Friedman Chi-Square, p 32.593, <0.001 and 55.062, <0.001, respectively), a

significant increase was observed and sustained in the number of publications of the recently hired scholars (Friedman Chi-Square=45.596, p<0.001) (Figure 2).
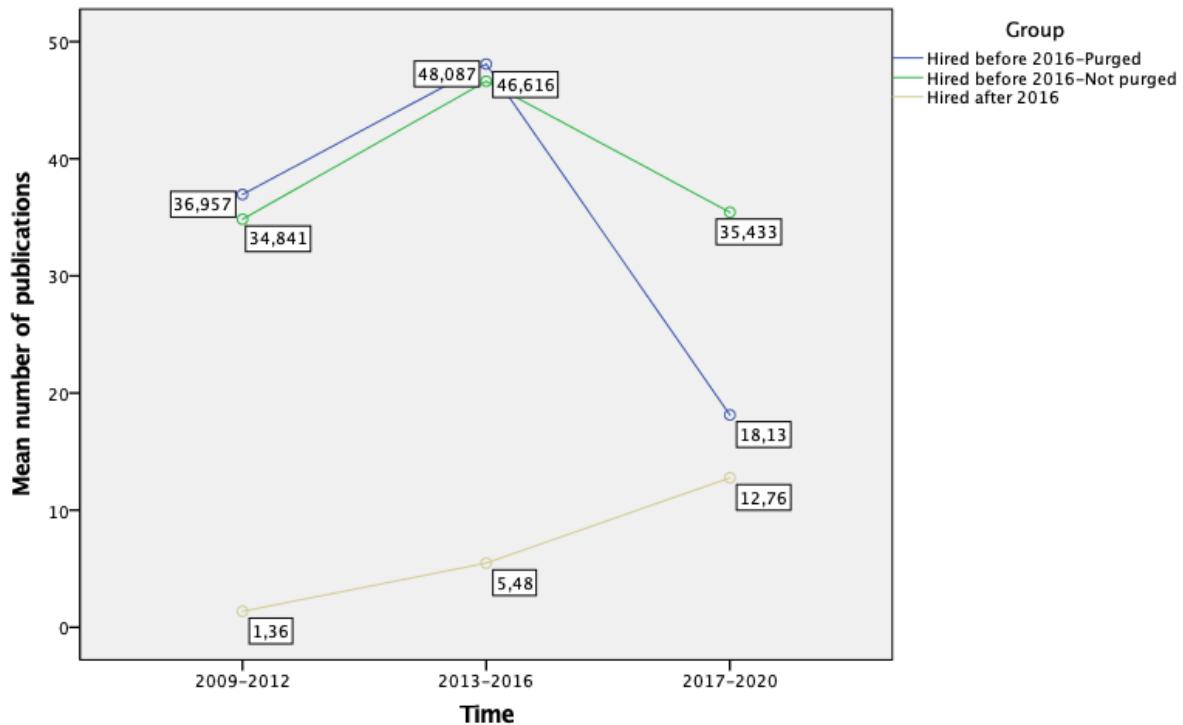

Figure 2: Comparison of the mean number of publications over time between the groups (N=212)

Discussion

Key Findings

This study demonstrated a significant decline in the academic productivity indices of Turkish academic family physicians following the decree laws after the coup attempt in 2016. Compared with their non-dismissed peers, the purged academics experienced a 48.8% loss in the total number of publications after 2016, whereas a decrease of 26.1% from 2013-2016 to 2017-2020 was observed in the total number of publications of all participants.

Limitations

This study relied on hits received from search terms of author names. Despite some limitations, Google Scholar is the commonplace search engine amongst all sectors of the academic community [16]. Although Google Scholar's coverage is wide-ranging, it is not comprehensive.

Therefore, cross-validation by other academic sources such as Web of Science could provide more reliable data. Furthermore, manual inspection of all search results would have excluded erroneous matches and grey literature. On the other hand, beyond the number of publications, the order of author names would deliver useful data to speculate on the weight of contributions of the different academic groups.

Interpretations

Turkish higher education is composed of 178 institutions, 158 097 academic staff, and 3 887 682 students [17]. Of the academic personnel, there are 28 858 professors, 16 761 associate professors, 41 670 assistant professors, and 70 808 other academic personnel [17,18]. As a comparison, Germany, a country with a similar number of population, has 399 higher educational institutions and 385 311 academic staff [19]. With the dismissal of the 7 236 persons, Turkey lost around 4.5% (7 236/158 097) of the total number of academic staff.

On the other hand, the 12.2% (23/187) dismissal proportions of academic family physicians is more than double of the total academic staff within the purged state employees. This percentage is similar to the 15.8% expelled academic medical staff within the total purged state employees (1 148/7 236) [4]. It is evident that medical academic professionals are more affected from the dismissal process.

The proportions of GDP reserved for higher education in Turkey were relatively stable from 2009 to 2014, followed by a small but decreasing trend thereafter (2016: 0.90%, 2017: 0.84%, 2018: 0.81%, and 2019: 0.74%) [20]. This change in the GDP proportions could have contributed to the decline in the general academic production rates. Another reason of the decrease is probably the experience status of the recently hired academics; all the new staff were assistant professors with naturally low number of scientific publications.

However, worldwide, the number of scientific articles have an inclination to increase yearly about 3% [21]. Therefore, we consider that the economic conditions of the country may have only a small effect on the fall of family physicians' academic productions. Furthermore, conforming with the world figures, we observed steady increases in the mean number of publications until 2016. Hence, a 26.1% decrease in a context where we expect a rise, can be attributed to the effects of emergency state era on academic performance.

Although efforts are made to prevent gender discrimination, sex disparities still exist in the Turkish higher education. Of the total academic employees, only 38.2% are females [22]. However, this would not explain the 91.3% male dominance in the expelled group. Besides, the male/female proportion among academic family physicians on duty is almost equal. We assume that more males could have been dismissed because of their academic positions and being perceived as political threats for the opponents.

The number of citations a scientific paper receives is a direct indicator of its impact. On the other hand, although the number of citations is expected to indirectly indicate the quality of the paper, this may not be so in all cases. Lowry says for his most-cited work in history: "Although I really

know it is not a great paper …" [23]. However, the fact is that most published work do not get cited at all. It was reported that from the 58 million articles in the Web of Science database, only 14 499 (0.02%) had more than 1 000 citations in 2014 [23]. From this perspective, we may consider that the works of the Turkish academic family physicians ranks above the world average. In our study, there was no significant difference in the mean citations of dismissed academic staff compared to their non-purged peers.

The H-index (or Hirsch-index) is an author-level indicator that measures the productivity and citation impact of publications. There are some critics concerning H-index, and alternative measures have been proposed. However, it still works properly for comparing scientists in a certain field [24]. According to Hirsch [25], an H-index of 20 is good, 40 is outstanding, and 60 is exceptional. In our study, Google Scholar could not provide a H-index for most participants and those for whom an index was reported had relatively low values.

The i10-index is a new academic metrics used by Google Scholar. It shows the number of publications with at least 10 citations. Although this index is not so widespread, it is simple and freely available. However, Google Scholar is accused for outbursts and lack of transparency [26]. Although there is no threshold suggested for a good i10-index, we may expect that a successful scholar should have an i10 index as high as his/her age. Our study demonstrated relatively low i10 indexes.

Academic losses in the extent of Turkey purge are rare in human history. Approximately 9 000 physicians were uprooted for racial or political reasons by the Nazi regime and 6 000 fled Germany [27]. Other significant losses have been observed during war-times such that happened in Syria. Thousands of medical doctors have fled from the conflict and sought refuge in Lebanon, Jordan, Turkey, and European countries. More than 3 000 Syrian medical doctors are estimated to work in Germany [28]. To our knowledge, neither Wonca (World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians) nor other scientific institutions, made efforts to assist the impacted victims of this purge.

Academic detriments resulting from conflicts have two sides. They cause destruction to the community, but more importantly, they harm the individual persons who are affected. Academic people who cannot function are forced to work in private hospitals with relatively low wages [29]. Considering that most of these scholars were kept under custody or imprisoned, most of these former academics are not able to participate in scientific studies. Therefore, it is not a surprise to observe a 48.8% decline in the number of publications of the dismissed academics.

On the other hand, the simultaneous decrease in the number of publications of non-dismissed scholars requires further elaboration. We do not know how many of the non-purged academics had a dismissed co-worker. It may be assumed that those who lost their colleagues during the purge process may got affected psychologically. Besides, if co-authors were involved in the same projects, the separation of one author can have negative influences on the others.

Furthermore, the remaining scholars may have felt the pressure of being under risk of dismissals too. However, these are speculative assumptions, which require validation by research data.

Although the recently hired scholars had the least number of academic performance indicators, as anticipated, they demonstrated a gradual increase over time. As it takes around 100 days to publish a scientific work following submission [14,30], the small but stable incline of the recently hired academics seems appropriate.

Conclusion

After-effects of the military coup attempt and the following decree laws had impacts on the dismissed academic family physicians as well as the general family medicine academy as a whole. It should be further investigated to what extend the functional loss of one author affects the other co-authors. As evidenced by our study, there should be mechanisms to avoid interference of political processes with the science population. It is also important to note that academical organizations from the world, need to be more proactive to protect scholars in crisis areas. Furthermore, other specialties apart from family medicine warrants investigation as well, to assess the harmful effects of the decree laws on the medical science community.

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