Honorary authorship in cardiothoracic surgery

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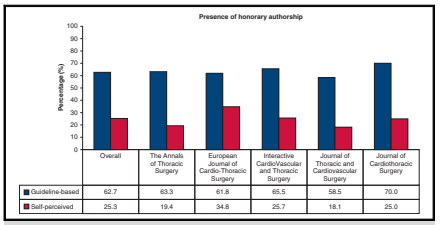
ABSTRACT

Background: Honorary authorship (HA) refers to enlisted authors who did not make sufficient contributions to a paper according to the guidelines, as defined by the International Committee of Medical Journal Editors (ICMJE). This study assessed the proportion of, and factors associated with, HA in cardiothoracic surgical literature in 2017.

Methods: Five cardiothoracic surgery journals were selected based on their impact factors in 2017 for evaluation of HA. Articles were included in the analysis if there was more than 1 listed author and if there was an available E-mail address of the corresponding author. All corresponding authors received an invitation to fill out our survey regarding their paper in 2017.

Results: In total, 1511 authors opened the invitation, resulting in a total of 590 respondents (28.9%); 77.1% of all authors were aware of the ICMJE guidelines and 47.0% were aware of the general issue of HA. A total of 367 (62.7%) authors stated that at least one of the coauthors had performed solely nonauthorship tasks, whereas 148 (25.3%) authors stated that they believed that their article contained at least one honorary author. Having a senior member who was automatically included on all submitted manuscripts and not being aware of the general issue of HA were associated with significantly greater odds of having HA.

Conclusions: Our results show that, despite the high awareness of the ICMJE guidelines, there is a large discrepancy in perceived HA and guideline-based HA. The authors plead for a better understanding and implementation of the guidelines in a more transparent authorship system. (J Thorac Cardiovasc Surg 2021;161:156-62)



Presence of honorary authorship, overall and per journal.

CENTRAL MESSAGE

Despite high awareness of the ICMJE guidelines on authorship, there is an abundance of honorary authorship in the cardiothoracic literature.

PERSPECTIVE

Why wrongful application of authorship guidelines within the cardiothoracic field occurs remains uncertain. A better understanding and implementation of the guidelines in a more transparent authorship system is needed.

See Commentaries on pages 163, 164, and 166.

Over time, there have been many changes regarding authorships in medical scientific literature. Until a few decades ago, sole authorship remained the standard for scientific publications.[1] Nowadays, most published articles in medical journals are multiauthorship papers, whereas the number of articles with only one author continues to decrease.[2,3] This trend toward multiauthorship has given rise to many questions regarding accountability and responsibility of listed authors, as well as phenomena such as ghost and honorary authorship (HA).[4-6] The latter also is referred to as "gift authorship," indicating that authorship has been granted without significant contribution to the article. The ethical issues concerning HA are worrisome, as they create ambiguity regarding the accountability and responsibility of listed authors. The *Lancet* stated in an editorial: "Honorary or gift authorship is unacceptable. Using gift authorship as an excuse for not taking responsibility for research when serious flaws are uncovered goes a step further, and should not be tolerated,"[4] illustrating the possible negative consequences of HA.

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Abbreviations and Acronyms
HA = honorary authorship
ICMJE = International Committee of Medical Journal Editors

The International Committee of Medical Journal Editors (ICMJE) has developed criteria for authorship to distinguish authors from other contributors, stating that authorship should be based on the following 4 criteria[7]:

1. "Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work;
2. Drafting the work or revising it critically for important intellectual content;
3. Final approval of the version to be published;
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved."

All individuals listed as authors should meet all 4 criteria to be granted authorship. Individuals listed as authors who do not meet these criteria are considered to be given HA. Several studies have been published that analyze the presence of HA in medical literature.[8-10] However, an analysis evaluating the presence of HA in cardiothoracic surgical literature has yet to be performed. Therefore, this study aims to provide an overview and evaluate the presence of and factors associated with HA in cardiothoracic surgical literature in 2017.

MATERIAL AND METHODS

In March 2018, 5 cardiothoracic surgery journals were selected and reviewed for all published articles in 2017. The selection of these journals was based on the height of their impact factors in 2017. The journals screened for this analysis consisted of: (1) *The Annals of Thoracic Surgery*, (2) *European Journal of Cardio-Thoracic Surgery*, (3) *Interactive Cardio-Vascular and Thoracic Surgery*, (4) *Journal of Thoracic and Cardiovascular Surgery*, and (5) *Journal of Cardiothoracic Surgery*. Articles were included in the analysis if (1) there was more than 1 listed author, and (2) there was an available E-mail address for the corresponding author. Letters to the editor, commentaries, and editorials were excluded from this analysis.

An online survey was conducted based on previously performed studies on this subject, using SurveyMonkey (Palo Alto, Calif).[10-12] The survey is available in the Online Data Supplement. The survey was sent to corresponding authors from March 2018. Authors received a total of 3 reminders to fill in the survey with intervals of 2 and 3 weeks. If any author had published more than 1 article within 1 journal in 2017, they were asked to fill in the survey for their latest article published in that journal in 2017. The survey covered: (1) professional history of the corresponding author, (2) awareness of the ICMJE guidelines and the general issue of HA, (3) information regarding the decision-making process concerning authorships, and (4) presence of HA in the corresponding author's article.

Corresponding authors were asked to declare whether coauthors solely performed nonauthorship tasks as defined by the ICMJE guidelines. If any coauthor merely performed these nonauthorship tasks, the article was recognized as an article containing guideline-based HA. Furthermore, corresponding authors were asked whether they deemed any coauthor to be unfairly listed as an author, in which case, the article was recognized to have self-perceived HA.

Statistical Analysis

χ^2 tests were performed to assess possible association between variables and presence of HA. If the univariable analysis resulted in a surplus of predictive variables (eg, more than 1 predictive variable for every 10 events), a lasso regression analysis was performed for variable selection

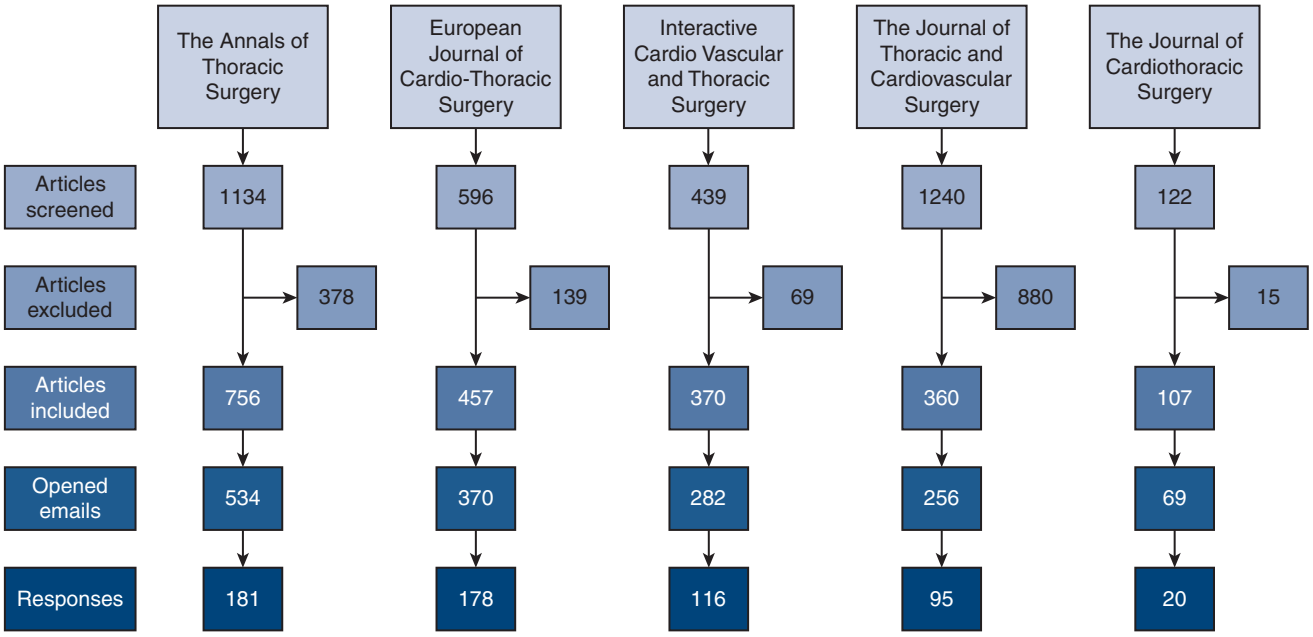


FIGURE 1. Overview of article selection and responses per journal.

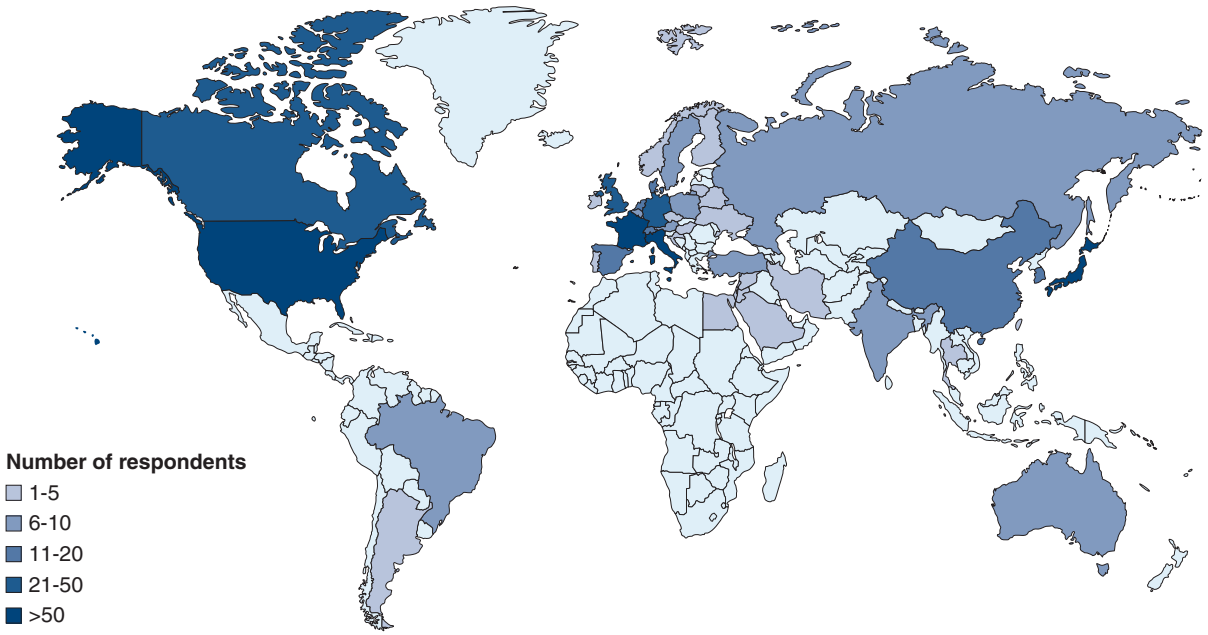


FIGURE 2. Overview of number of respondents per country.

to prevent possible overfitting. A complete case analysis using multivariable logistic regression was computed to calculate odds ratios with their respective 95% confidence interval for variables showing possible association in the univariable analysis. A P value <.05 was considered to be statistically significant. All statistical analyses were performed using R[13] using the software RStudio, Version 1.0.136 (RStudio, Inc, Boston, Mass).

RESULTS

A total of 3531 articles, published in 2017, were screened for inclusion (Figure 1); 2050 authors were selected to participate in this study and received an invitation to fill out the survey. In total, 1511 of these authors had opened the invitation E-mail, resulting in a total of 590 respondents

TABLE 1. Awareness of guidelines and general issue of honorary authorship, overall and per journal

Journal	Aware of ICMJE guidelines for determining authorship (%)*	n	Aware of other guidelines than ICMJE for determining authorship (%)	n	Aware of general issue of HA*	n
ATS	Yes (77.2) No (22.8)	180	Departmental/institutional guidelines (62.3) No guidelines are followed (32.8) Other (4.9)	61	Yes (51.7) No (48.3)	176
EJCTS	Yes (74.7) No (25.3)	178	Departmental/institutional guidelines (51.5) No guidelines are followed (42.4) Other (6.1)	66	Yes (44.6) No (55.4)	177
ICVTS	Yes (78.8) No (21.2)	113	Departmental/institutional guidelines (78.0) No guidelines are followed (12.0) Other (9.8)	41	Yes (37.5) No (62.5)	112
JTCVS	Yes (79.8) No (20.2)	94	Departmental/institutional guidelines (60.0) No guidelines are followed (37.1) Other (2.9)	35	Yes (54.3) No (45.7)	92
JCS	Yes (75.0) No (25.0)	20	Departmental/institutional guidelines (50.0) No guidelines are followed (37.5) Other (12.5)	8	Yes (45.0) No (55.0)	20
Overall	Yes (77.1) No (22.9)	585	Departmental/institutional guidelines (61.1) No guidelines are followed (32.7) Other (6.2)	211	Yes (47.0) No (53.0)	577

ICMJE, International Committee of Medical Journal Editors; *HA*, honorary authorship; *ATS*, The Annals of Thoracic Surgery; *EJCTS*, European Journal of Cardio-Thoracic Surgery; *ICVTS*, Interactive CardioVascular and Thoracic Surgery; *JTCVS*, Journal of Thoracic and Cardiovascular Surgery; *JCS*, Journal of Cardiothoracic Surgery. *Before partaking in the study.

(28.9%), of whom 585 completed the survey (99.2%). Detailed respondent characteristics are shown in Table E1. The majority of respondents (86.3%) were male and currently working as a (cardio)thoracic surgeon (76.8%). A total of 58.1% of the respondents had published more than 26 peer-reviewed manuscripts, and 75.6% indicated that their primary role in the writing of the surveyed article was writing all or most of it.

Figure 2 provides an overview of the number of respondents per country. Africa (n = 1, 0.1%) and South America (n = 11, 1.9%) had the least respondents and were underrepresented in this study.

Of the respondents, 77.1% were aware of the ICMJE guidelines for determining authorship before the survey and 47.0% were aware of the general issue of HA (Table 1). In total, 211 respondents (36.1%) were (also) aware of other guidelines for determining authorship, and 70 respondents stated that no guidelines were followed when determining authorship.

A minority of respondents stated to have a senior member within their department that was automatically included on all submitted manuscripts (34.5%) (Table 2). A suggestion to include an honorary author was made in a small number of cases (11.3%).

With respect to HA, 367 (62.7%) authors stated that at least 1 of the coauthors had performed solely nonauthorship tasks based on the ICMJE guidelines. In total, 148 (25.3%) authors stated that they believed that, based on their current understanding of the ICMJE guidelines, their article contained at least one honorary author (Figure 3).

Tables 3 and 4 show the results of our multivariable analysis of factors portraying possible association in the univariable analysis for guideline-based HA and self-perceived HA, respectively. Due to underrepresentation of manuscripts from South America (n = 11) and Africa (n = 1), continent of origin was analyzed as being either Europe or non-Europe based.

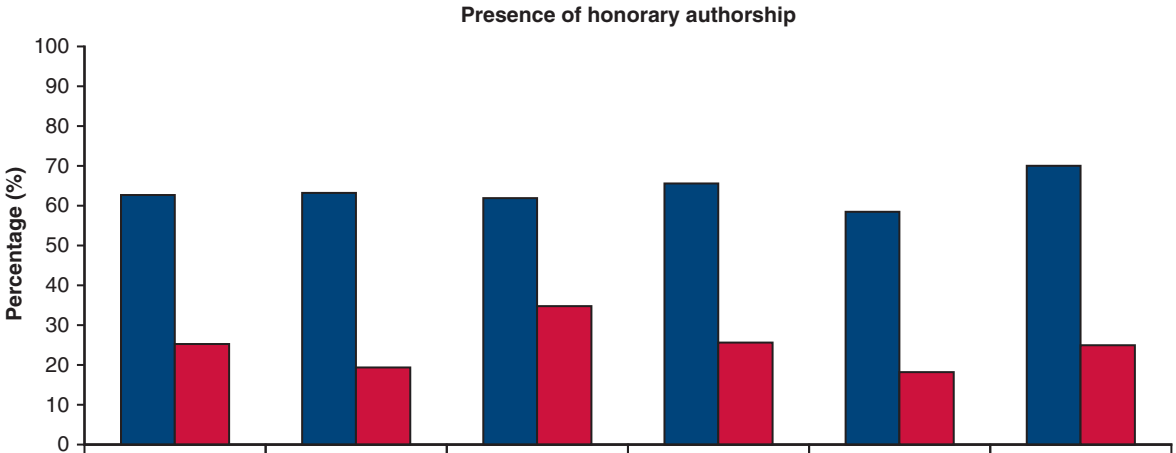
TABLE 2. Questions regarding the determination of authorship

Variable	n (%)	n
Individual that decided the order of authorship		585
Authors decided as a group	158 (27.0)	
The first author	246 (42.1)	
The senior author	159 (27.2)	
Other	22 (3.8)	
Criteria used to decide order of authorship		585
In the order of the amount each contributed	223 (38.1)	
In the order of the amount each contributed, except the last author, who is the most senior in the group but did not contribute to the study	74 (12.6)	
In the order of the amount each contributed, except the last author, who provided the concept, supervision, and responsibility for all working steps of the project	258 (44.1)	
In alphabetical order	4 (0.7)	
Other	26 (4.4)	
Presence of a senior member that is automatically listed as an author on all submitted manuscripts		583
Yes	201 (34.5)	
No	361 (61.9)	
Don't know	21 (3.6)	
Whether the author deems it to be justified to automatically list a senior member as an author on all submitted manuscripts		444
Always	40 (9.0)	
Most of the time	81 (18.2)	
Sometimes	131 (29.5)	
Rarely	105 (23.6)	
Never	87 (19.6)	
Suggestion to include an honorary author was made		583
Yes	66 (11.3)	
No	517 (88.7)	

Comment

This is the first study to assess the presence of HA in the cardiothoracic surgical literature. Our results show that there is a large discordance between guideline-based HA and self-perceived HA. Only 25.3% of all respondents stated to believe their article contained an honorary author, whereas 62.7% of all respondents had 1 or more authors who solely performed nonauthorship tasks. Considering the fact that the vast majority of respondents were aware of the ICMJE guidelines (77.1%), one should consider that the underlying issue that leads to HA is not necessarily the awareness, but the implementation or sufficient understanding of these guidelines. This was also illustrated in our multivariable analysis in which awareness of the ICMJE guidelines was deemed nonsignificant in relation to HA ($P = .54$). Unawareness of the general issue of HA, however, was associated with significantly greater odds of having an honorary author on the submitted manuscripts (Table 3), highlighting that awareness of this issue remains an important factor in prevention.

Another factor that had a significant influence on the presence of an honorary author was the criteria that were used in determining the order of authorship on the manuscript. Manuscripts in which this decision was made as a group had significantly smaller odds of having an honorary author (Table 3). The authors believe that this may be the result of possible collaborations between departments or multicenter studies, in which the guidelines would have had a more prominent role in determining whether an individual becomes an author, when compared with studies within 1 department. This could, however, not be accounted for with the current survey.



	Overall	The Annals of Thoracic Surgery	European Journal of Cardio-Thoracic Surgery	Interactive CardioVascular and Thoracic Surgery	Journal of Thoracic and Cardiovascular Surgery	Journal of Cardiothoracic Surgery
Guideline-based	62.7	63.3	61.8	65.5	58.5	70.0
Self-perceived	25.3	19.4	34.8	25.7	18.1	25.0

FIGURE 3. Presence of honorary authorship, overall and per journal.

Based on our results, self-perceived HA seems to be primarily associated with the involvement of a senior member in the decision-making process concerning authorships (Table 4). Nonetheless, it should be noted that, except for the automatic inclusion of a senior member who did not contribute to the study on all manuscripts, none of these factors were associated with significantly larger odds of having guideline-based HA. In fact, an inverse significant association was observed when looking at the decision-making process with regard to the order of authorship and the presence of guideline-based HA and self-perceived HA ($P = .02$, $.06$, $.03$ vs $P = .70$, $<.01$, $.47$ for guideline-based HA and self-perceived HA, respectively). When analyzing the possibility of cases in which there was self-perceived HA, but not guideline-based HA, we found that 22 respondents (14.9% of all cases with self-perceived HA) did in fact declare to believe to have an honorary author but did not have any authors on their manuscript performing only nonauthorship tasks, demonstrating once more the importance of the proper understanding of the guidelines rather than the sole awareness of their existence.

Our findings regarding the presence of HA are in line with previous results reported in different medical fields.[14-17] The discordance found between self-perceived HA and guideline-based HA has also been continuously demonstrated through time in similar studies.[14,18,19] Eisenberg and colleagues[14] reported to have found a nonsignificant increase in the prevalence of HA in the field of radiology after conducting a follow-up study on their previous work regarding HA. Nonetheless, the discordance between self-perceived HA and guideline-based HA was present in all 3 studies.

The authors recognize several limitations in this study. First, the response rate to our survey was 28.9%. Nonresponse bias may lead to under- or overestimation of the proportion of HA within this medical field. Suggestions for minimum response rates of up to 60% can be found in the literature.[20,21] These are, however, arbitrary and subject to debate. Our response rate of 28.9% is similar to previous research conducted in different medical fields, reporting response rates between 25.2% and 32.6%.[11,16,17] Moreover, even with the possibility of nonresponse bias, 148 (25.3%) of corresponding authors stated to believe to have an honorary author in their article, which itself portrays a worrisome amount.

A second limitation may be the choice of the authors to address the corresponding authors. In many research groups, the first author may be more likely to be the junior researcher whereas the corresponding author may be a more senior researcher who will stay approachable for correspondence on the manuscript for the long term. This may have led to some bias regarding variables concerning the senior author in the survey. In total, 64.6% of the respondents had an academic rank as associate, assistant or full professor. However, our results show that 75.6% of the respondents wrote all or most of the article, and 63.4% were both the corresponding and first author, minimizing the impact of this limitation.

A third limitation within our study may be the presence of recall bias. A total of 58.1% of all respondents coauthored

TABLE 3. Multivariable analysis regarding guideline-based HA, n = 574

Variable	OR (95% CI)	*P* value
Sex (ref. male)		
Female	0.58 (0.33-1.03)	.06
Academic title (ref. professor)		
Associate professor	1.26 (0.73-2.18)	.40
Assistant professor	1.39 (0.72-2.68)	.33
Instructor/lecturer	0.73 (0.30-1.77)	.48
Fellow/resident	1.16 (0.60-2.27)	.66
Other	0.82 (0.44-1.55)	.54
Primary profession of corresponding author (ref. (cardio)thoracic surgeon)		
Other MD	0.65 (0.37-1.15)	.14
PhD candidate/researcher	0.84 (0.40-1.76)	.65
Other	0.60 (0.25-1.46)	.26
Aware of the general issue of HA (ref. yes)		
No	1.55 (1.04-2.30)	.03
Aware of the ICMJE guidelines (ref. yes)		
No	1.17 (0.71-1.91)	.54
Presence of a senior member who is automatically included on all manuscripts (ref. no)		
Yes	2.91 (1.80-4.72)	<.01
Don't know	1.06 (0.39-2.85)	.91
Position among authors (ref. first author)		
Corresponding author only	0.75 (0.38-1.47)	.40
Senior author	0.79 (0.42-1.48)	.45
Primary role in writing (ref. writing all or most)		
Supervising the writing of others	0.61 (0.29-1.29)	.19
Revising article and making corrections and/or changes in content	1.20 (0.53-2.71)	.66
Performed the majority of data collection and/or analysis	1.20 (0.33-4.33)	.78
Other	0.73 (0.32-1.65)	.45
Criteria used to decide order of authorship (ref. in the order of the amount each contributed)		
In the order of the amount each contributed, except the last author, who is the most senior in the group but did not contribute to the study	2.24 (1.02-4.94)	.05
In the order of the amount each contributed, except the last author, who provided the concept, supervision, and responsibility for all working steps of the project	1.30 (0.84-2.01)	.24
Other	0.86 (0.37-2.03)	.74
Individual that decided the order of authorship (ref. authors decided as a group)		
The first author	1.77 (1.08-2.88)	.02
The senior author	1.63 (0.98-2.72)	.06
Other	3.37 (1.10-10.36)	.03
Suggestion to include an honorary author was made (ref. no)		
Yes	1.62 (0.81-3.26)	.17
Nagelkerke R2	0.21	

OR, Odds ratio; *CI*, confidence interval; *HA*, honorary authorship; *ICMJE*, International Committee of Medical Journal Editors.

more than 26 peer-reviewed articles, which may have led to discrepancies with regard to their own work and that of their coauthors when recalling these events from memory. Therefore, the presence of recall bias seems inevitable within our study.

Lastly, our survey did not cover the possible role of peer pressure and career risks regarding the inclusion of an honorary author. The authors suspect that these characteristics will play a relatively larger role with regard to junior authors.

In conclusion, our results show, that despite the high awareness of the ICMJE guidelines, there is a high proportion of HA in the field of cardiothoracic surgery. Furthermore, our results indicate that the guidelines are not always correctly understood or implemented. Further research is necessary to evaluate the reason behind the wrongful application of the guidelines within this field. The authors plead for a better understanding and implementation of the guidelines in a more transparent authorship system.

TABLE 4. Multivariable analysis regarding self-perceived HA, n = 574

Variable	OR (95% CI)	*P* value
Sex (ref. male)		
Female	0.73 (0.37-1.46)	.38
Aware of the general issue of HA (ref. yes)		
No	1.11 (0.68-1.78)	.68
Aware of the ICMJE guidelines (ref. yes)		
No	1.19 (0.70-2.04)	.52
Presence of a senior member who is automatically included on all manuscripts (ref. no)		
Yes	6.39 (3.87-10.55)	<.01
Don't know	0.63 (0.13-3.12)	.57
Position among authors (ref. first author)		
Corresponding author only	1.32 (0.64-2.74)	.46
Senior author	0.84 (0.43-1.64)	.60
Criteria used to decide order of authorship (ref. in the order of the amount each contributed)		
In the order of the amount each contributed, except the last author, who is the most senior in the group but did not contribute to the study	1.73 (0.91-3.31)	.10
In the order of the amount each contributed, except the last author, who provided the concept, supervision, and responsibility for all working steps of the project	0.52 (0.30-0.91)	.02
Other	1.53 (0.54-4.37)	.43
Individual that decided the order of authorship (ref. authors decided as a group)		
The first author	1.14 (0.59-2.18)	.70
The senior author	3.04 (1.55-5.98)	<.01
Other	1.60 (0.45-5.70)	.47
Suggestion to include an honorary author was made (ref. no)		
Yes	4.30 (2.26-8.18)	<.01
Nagelkerke R2	0.36	

OR, Odds ratio; *CI*, confidence interval; *HA*, honorary authorship; *ICMJE*, International Committee of Medical Journal Editors.

Conflict of Interest Statement

All authors have nothing to disclose with regard to commercial support.

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Key Words: authorship, ICMJE guidelines, honorary

TABLE E1. Respondent and manuscript characteristics, n = 585

Variable	n (%)
Sex	
Male	505 (86.3)
Female	80 (13.7)
Continent	
Africa	1 (0.2)
Asia and Oceania	120 (20.5)
Europe	296 (50.6)
North America	157 (26.8)
South America	11 (1.9)
Primary profession	
(Cardio)thoracic surgeon	449 (76.8)
Other MD	71 (12.1)
PhD candidate/researcher	40 (6.8)
Statistician	1 (0.2)
Other	24 (4.1)
Academic title	
Professor	158 (27.0)
Associate professor	135 (23.1)
Assistant professor	85 (14.5)
Instructor/lecturer	31 (5.3)
Fellow/resident	86 (14.7)
Other	90 (15.4)
Number of peer-reviewed manuscripts coauthored	
<5	66 (11.3)
6-10	69 (11.8)
11-15	48 (8.2)
16-20	30 (5.1)
21-25	32 (5.5)
>26	340 (58.1)
Length of professional experience, y*	
1-2	62 (10.6)
3-5	102 (17.4)
6-10	107 (18.3)
>10	314 (53.7)
Primary role in writing of paper published in 2017	
Writing all or most of the article	442 (75.6)
Supervising the writing of others	51 (8.7)
Revising article and making corrections and/or changes in content	43 (7.4)
Performed the majority of data collection and/or analysis	11 (1.9)
Writing minor parts of the article	10 (1.7)
Other	28 (4.8)
Position among authors of paper published in 2017	
First author	371 (63.4)
Corresponding author only	76 (13.0)
Senior author	138 (23.6)
Funds received for paper published in 2017†	
No funds received	457 (78.1)
(Pharmaceutical) industry	17 (2.9)
University-sponsored	64 (10.9)
Other	64 (10.9)

*Since receiving highest professional degree. †More than 1 answer possible per respondent.