Registration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity

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Abstract

This article reports on prevalence of registration of empirical studies presented at three editions of the World Conference on Research Integrity (Hong Kong, 2019; Cape Town, 2022; Athens, 2024) at the time of abstract submission. During registration and abstract submission, applicants were invited to answer questions on registration of the study they present and their academic background. Descriptive analyses of the responses regarding a total of 452 abstracts describing empirical studies, showed that the prevalence of registration among presenters of empirical research did not increase across the three WCRIs, and were on average 28 percent. The verifiability of claims of registration did increase over time, however, and went from 44 to 88 percent of the abstracts of empirical studies claimed to be registered. Reasons given for not registering varied substantially, but little faith in its usefulness and unfamiliarity were frequently mentioned. Younger researchers tended to register more often than others, and researchers with a biomedical background registered more frequently. We suggest to simplify the registration process and propose that funding agencies, research institutes and scholarly journals should demand registration of empirical studies.

Keywords: Open science, Registration, Research ethics, Responsible research practices, Study protocols, World Conference on Research Integrity

Registration of Research on Research Integrity is still Not Common: Findings from the Hong Kong, Cape Town, and Athens Editions of the World Conference on Research Integrity

Background

Registration[1] involves researchers publishing a time-stamped study description in a repository (e.g., Open Science Framework, OSF; [2]) before the data are collected and analyzed (e.g., [3]). Registrations can be made public immediately or be embargoed for a variable period. Ideally, the registration consists of a full study protocol that includes the research questions to be addressed, the hypotheses to be tested, the data collection design, and a detailed statistical analysis plan (e.g., [4]). Registration serves three goals (e.g., [3, 5]). First, it encourages researchers to adhere to a specific plan, which should help to protect them against engaging in questionable research practices (QRPs; e.g., [6]) such as hypothesizing after the results are known (i.e., HARKing; [7]; [3]) and *p*-hacking [8]. Second, registration provides reviewers and readers with transparency of all steps and decisions that are made throughout the study. By comparing registrations to later publications, reviewers and readers can detect QRPs if present [3, 5, 9]. Third, registration may help to prevent publication bias and selective outcome reporting [10]. Registered reports are a promising novel form of registration [9, 11, 12, 13] which is still at an early adopters phase. While acknowledging its potential for future registration, we refrain from further discussion here.

[1] Since the beginning of this century, in clinical medicine, the term *registration* became increasingly common for registering randomized clinical trials before the start of data collection. First, this was made mandatory by drug licencing authorities (like the FDA). Later, this example was followed by many funders of and journals for clinical research. A decade later, the idea was introduced in the social sciences as *preregistration* ([1]). In the 2025 update of the TOP guidelines ([2]), registration has been selected as the preferred term for all the sciences. We follow this convention.

There is growing consensus that registration facilitates transparent, credible, and reproducible research ([3], although a number of authors question this and make critical comments on the applicability and usefulness of registration, see, e.g., [14, 15]). Our own position is that empirical hypothesis-testing studies should be registered, although we are unsure about the desirability of registration of explorative or qualitative research. Registration supports practicing responsible research practices (RRPs), optimizing the validity and trustworthiness of research (e.g., [16, 17]), and also encourages redirecting the focus from detection and prevention of QRPs to promoting and fostering RRPs [18, 19].

In OSF, the number of registrations almost doubled every year from 2012 to 2019 [20]. However, despite this growth, researchers often experience various barriers to register their study (e.g., [5, 20, 21], including perceived bureaucratic burden, uncertainties associated with changing research practices, or simply misconceptions about what registration entails. It is of interest to understand reasons for not registering, and such insight may help the scholarly community to better understand why researchers refrain from registering their study and to design interventions for promoting registration.

Several studies [17, 19, 21, 22] reported a substantial increase of registration, but except for clinical trials, results also suggest that the prevalence of registration remains modest (e.g., see [21, 23]). Studying registration prevalence is difficult as we only have access to data on unpublished registered studies (e.g., via repositories such as OSF), published non-registered studies and published registered studies (e.g., [12, 22, 23, 24]), but not to non-published non-registered studies. One possibility to collect such data on non-published non-registered studies is by studying registrations of ongoing studies presented at conferences. This is what we did in the present study.

This article reports on the extent to which empirical studies presented at the 6th (Hong Kong, 2019) [25], 7th (Cape Town, 2022) [26], and 8th (Athens, 2024) [27] World Conference

on Research Integrity (WCRI) were registered at the time of abstract submission. Empirical research refers to studies where quantitative or qualitative data is collected and/or analyzed. Non-empirical research refers to research such as hermeneutic reflection, development of theories, models or codes, and academic design activities, like in art or architecture. The WCRI brings together a community of researchers of research integrity from diverse disciplines, inside and outside (e.g., government, grant agencies, publishers) of academia, from all over the world (e.g., see https://wcrif.org/). Researchers report on empirical and non-empirical research they conducted. We focused on empirical studies, because it is debatable whether non-empirical research should to be registered and, if so, how this can be done. In addition to organizing a bi-annual conference (between Hong Kong and Cape Town was a three-year gap due to the COVID pandemic), the WCRI strives to promote RRPs by publishing a series of authoritative statements. One of these was the Amsterdam Agenda which was endorsed during the 5th WCRI conference in Amsterdam (2017; https://wcrif.org/guidance/amsterdam-agenda; [28]). The Amsterdam Agenda encourages researchers to plan, conduct, report and share their research around six key elements. Researchers of research integrity were urged to register their studies by the Amsterdam Agenda. The next three WCRIs were used to study the prevalence of registration , and we report the results in this paper.

The results for the 6th WCRI in Hong Kong were already published [21] and show that 25% of the empirical studies were registered. For half of these studies, the registration could not be successfully verified, because links provided did not work, did not open a repository like OSF, or opened a repository containing irrelevant information. In the current study, we discuss the results of the 6th WCRI together with those of the 7th and 8th WCRIs to have a completer picture of the trend of adopting registration in the WCRI community across time. Especially among researchers presenting their work at the WCRI, we expect that they

practice what they preach (as made explicit by the Amsterdam Agenda) and would show considerable improvement registering since 6th WCRI in 2019. We hope to learn from our study which factors might work against registration, might such an increase be absent.

Our study questions were: (1) Do the percentages of registration of empirical research accepted for oral or poster presentation show improvement across the three WCRIs? (2) To what extent is the prevalence of registration associated with characteristics of these studies and of the leading applicant, and can we derive specific trends from this? (3) What are reasons not to register, and do they suggest policy interventions to reduce potential barriers for registration?

Method

Data Collection

We conducted a descriptive time trend study of the registration of empirical research reported on in abstracts accepted for three consecutive editions of the World Conferences on Research Integrity. Data collection for the 6th WCRI is described in [21]. Because WCRI organizers made the raw data available for research only five weeks before we had to present the results at the conference, time was too short to ask participants retrospectively for consent. Obviously, registration and ethical approvement could not be realized within this short time span. All of this emphasized that we must aim at a more responsible approach with the next conference. Participant anonymity was realized in the publication [21].

The data were extracted *ad hoc* from participant registration files that the organizers of the 6th WCRI set up for administrative purposes. We analyzed data for paper and poster proposals that had been accepted. KS verified whether registration was accessible via the link the applicants provided, and checked in cases where accessibility was possible whether the repository contained information relevant for registration. For the studies claimed to have been registered but not verifiably so, KS found no evidence of registration or information

about studies different from the study referred to in the conference abstract, while the majority required signing-in codes that proved unavailable, led to irrelevant websites, or produced an error message [21].

Data collection for 7th WCRI started in May 2021 when abstract submission for the 7th WCRI planned a year later started. Having learned from the previous occasion, registration was done in time (registration in OSF on April 24, 2021; see https://osf.io/w4dz9/), ethical approvement was obtained from two ethical committees (viz., the Ethical Review Board of Tilburg University, the Netherlands, reference no. RP549; and the South African National Health Research Ethics Council, protocol no. REC 8/23/02/22), and participants were asked for consent to use their registration data when they registered for the 7th WCRI. The data were collected by the local organizing committee of the WCRI in Cape Town, under the auspices of the WCRI Governing Board. We only had access to the anonymized data from applicants who gave informed consent. Our final analyses differed from the registration in two aspects. First, country of affiliation was not included in the analyses. Second, the number of verifiable registrations was considerably smaller than the 120 to 180 registered abstracts we anticipated in the study design, thus limiting the possibilities for data analysis.

WE verified whether links provided led to a repository and checked whether information found there referred to the study questions/hypotheses and the study design. For the non-registered studies, WE and KS independently conducted a qualitative analysis of the reasons stated. The motivations were categorized *ad hoc* into eight categories (seven substantive categories and one rest category) based on the respondents' answers.

Data collection for 8th WCRI took place from July 2023 until May 29, 2024 when registration for the 8th WCRI was closed. We registered the study as planned (registration in OSF on January 31, 2024; see https://osf.io/2f3be/) and obtained ethical approvement (viz., the Ethical Review Board of Tilburg University, the Netherlands, reference no.

TSB_RP1427). As with the previous study, participants were asked for their consent to use the data they supplied when they registered for the 8th WCRI. To stimulate a greater participation in our study, we rephrased some of the questions asked and deleted others that we found rather uninformative in previous studies. Data analysis again was descriptive and limited to cases concerning accepted paper and poster proposals.

WE verified whether links participants provided led to a repository and checked whether information found there referred to the study questions/hypotheses and the study design. In this data collection wave, instead of using a closed question, we provided a set of possible reasons for not registering that we based on previous surveys, and also provided the participants with an open answer box to write down reasons for not pre-registering in their own words.

The data collection procedures for the three studies were not completely identical, because each new study took advantage of the previous studies to further optimize the study design and to ask better-targeted research questions. As a result, the studies include partly different variables for which data were collected, but still have enough in common to compare their results and to find a common language for describing study characteristics, thus avoiding having to explain in detail how the three studies differed, potentially confusing a correct understanding of what the studies have in common.

Study Design

For all three conferences, data were collected only for abstracts that were accepted for a paper or poster presentation. The abstract had to be submitted by one of its authors and the presenter had to be one of the authors. For the 6th WCRI, we were not involved in the actual data collection process and only had standard submission data at our disposal. Study variables were defined *ad hoc,* using the raw data to obtain scores. For the 7th and 8th WCRI, we were involved in the *a priori* choice and formulation of the questions asked of the participants and

198 therefore more in control of the data collection. For the 7th and 8th WCRI, the participant who
199 submitted the abstract, henceforth referred to as the leading applicant, was invited on the
200 conference website to answer questions on registration of the presented study as part of the
201 registration and abstract submission procedures, but only if they first had given their consent.
202 Participants were allowed to submit more than one abstract and could thus be the leading
203 applicant for multiple accepted abstracts. As a result, the number of abstracts exceeded the
204 number of unique leading participants. Also, between conferences there may be some modest
205 author overlap due to (leading) participants visiting several WCRI conferences and
206 presenting papers or posters at several occasions. Because the dependence thus created likely
207 was relatively weak and samples were too small for analyses corroborating this, we
208 considered all included abstracts to be independent. Abstracts related to non-empirical studies
209 were excluded.

210 **Variables**

211 We discuss and present only variables for which data were collected for all three
212 conferences, and leave out variables unique to only one or two conferences. The reason some
213 variables were not used on all three occasions is that they invariably showed little if any
214 relationship to whether the study was registered. Unless stated otherwise, the leading
215 applicant was the source of information. Variables and information used were:

216 • Has the presented study had been registered[2] (yes/no)?
217 • For studies claimed to have been registered, what is the link to the repository?
218 • KS (6th WCRI) and WE (7th and 8th WCRI) checked whether the link provided leads
219 to a time-stamped registration for the study described in the abstract (yes/no).

[2] In the questions asked of the applicants we used preregister/preregistration instead of register/registration. We changed the terminology in this article after a reviewer made us aware of the recent consensus to use registration for all sciences.

- For the 7th WCRI, if a study was claimed not to be registered, the leading applicant was asked provide the reason in their own words. The open answers for 7th WCRI were categorized ad hoc by WE. However, because many of these responses were uninformative, data were collected in a more targeted way for the 8th WCRI. Applicants who claimed not to preregister were asked to motivate their choice by selecting an answer from a list of five options. The response options focused on motivations related to the applicants' own experiences, expectations and opinions. An open-response option was added to allow applicants to provide additional reasons.
- Did the study concern quantitative or qualitative empirical-data analyses (choose one or both)?
- How should the study be categorized into one of a number of predefined research themes (choose or provide one)? (The 6th WCRI study responses were coded *ad hoc* and KS assigned studies to categories defined *a posteriori*. In the other two studies, applicants could choose from a list of options.
- What is the leading applicant's career stage (choose one)? (three categories: early stage, up to 5 years post education; mid-career, 5 through 10 years post education; and established, working more than 10 years post education.)
- What is the leading applicant/s academic rank (choose one)? (four categories: bachelor or master student; PhD student; post-doc or assistant professor; associate or full professor.)

Data Analyses

Due to modest sample size, the statistical analysis was descriptive. We focused on results across the three studies. Only quantitative or qualitative empirical studies were included in the analyses. First, we calculated the prevalence (percentage) of registration and

identified the repositories used. Second, we studied differences in registration prevalence between research themes, career stage, and academic rank. All analyses were done in base R.

Results

In what follows, we discuss the most important results on variables that the three studies had in common and which are relevant to obtain a general picture of registration practices across the three conferences. For more specific results concerning 6th WCRI, we refer to [21]. For 7th WCRI and 8th WCRI, we provide details on the sample composition in the Appendix (e.g., flowcharts for the selection processes concerning the abstracts).

Table 1 shows the numbers and percentages of studies leading applicants claimed to be registered. In the footnote, we state the percentage of those studies we were able to verify that the study was registered. The results from the three conferences show that there was little if any improvement in the registration prevalence over time. On average only 28% of the empirical research underlying papers and posters presented at these conferences was registered. The verifiability of claims of registration did improve over time, however, and increased from 44 to 88% of the abstracts of empirical studies that claimed to have registered.

Table 1: Number of Empirical Studies, Number (#) Claimed to be Registered, and Percentage (%) Results for Hong Kong, Cape Town, and Athens WCRIs

WCRI	No. Emp. Studies	# Claimed Registrations	% Claimed Registrations
Hong Kong 2019	207	52	25
Cape Town 2022	102	33	32
Athens 2024	143	42	29
Total	452	127	28

Notes:
[1] Less than half provided relevant information (44%)
[2] 20 of 33 (61%) could be verified
[3] 37 of 42 (88%) could be verified

For 7th WCRI, 50 out of 69 presenters of an empirical study gave additional information on why they refrained from registration. Their motivations were categorized into

eight broader categories (**Table 2)**. Because explanations were either too general (e.g., "not relevant") or cryptic (e.g., "this abstract was a post-hoc experience"), identifying general trends was difficult. Fourteen (14) respondents claimed their study did not qualify for registration (e.g., exploratory or descriptive research, study was not a clinical trial, involved desktop research, policy analysis, or theoretical reflection). Other reasons were that the study was only in the design phase, that registration was underway but not yet realized (but in a few cases, data collection had already started). For 8th WCRI, **Table 3** shows that among 84 explanations, 20 (24 percent) concerned not acknowledging the value of registration, while 17 (20 percent) referred to unfamiliarity with the procedure.

Table 2: Reasons Not to Register (7th WCRI; *n* = 69)

#	Reason	Frequency
1	Study is published in Chinese	3
2	The study type is deemed inadequate for registration: desktop research, descriptive analysis, (scoping) literature review, policy research	14
3	Research is in an early stage ('idea search'), ongoing	4
4	Registration is uncommon in field, or deemed not mandatory	2
5	Study was already approved by the institute's review board, funding agency, ethics board	5
6	Study not done yet	6
7	Study was a student project	4
8	Other: financial constraints (1), study began before registrations were promoted (1), study is a follow-up on published studies (2), not clearly specified (8)	12
Total		**50**
No response		*19*

285 **Table 3:** Reasons Not to Register (8th WCRI; $n = 92^a$)

#	Reason	Frequency
1	Unnecessary, no added value	19
2	Time-consuming, too much work	1
3	Undesirable because of loss of flexibility	1
4	Undesirable because of implicit message of distrust	0
5	Unfamiliarity with registration	17
6	Other: local ethics committee already approved, research in preparation, registration too early, registration uncommon in my field, not needed when research is qualitative; and so on	38
Total		**76**[b]
No response		17
Invalid response		2[c]

[a] Results are based on the 92 respondents who did not claim an existing or planned registration in the future.

[b] 70 out of 92 reported one reason and 3 out of 92 respondents reported two reasons, resulting in a total number of 76 reasons mentioned by 73 respondents.

[c] The reported reason only expressed intent to register the study later.

286

287 **Table 4** is an extension of Table 1, showing that there is no discernable difference in
288 preparedness to register among researchers presenting qualitative or quantitative studies. This
289 conclusion is also valid when it comes to verifiability of registration claims (8th WCRI).

290 Association of registration prevalence with career stage and academic rank were not
291 explicitly addressed for the 6th WCRI study, but were addressed for the other two WCRIs.
292 For the 7th WCRI, **Table 5** suggests that registration is more common among researchers
293 early in their career (45%) than among senior researchers (18%), but for 8th WCRI, the
294 percentages were similar among career stages (around 30% for each career stage). Because
295 academic rank and career stages are highly correlated, we found similar patterns as with
296 career stage (results not presented). Except for some weak associations that were hard to
297 interpret, we did not find association between registration prevalence and research themes
298 (results not presented).

299

Table 4: Studies Claimed to be Registered and Percentage of those Studies Verified Registered across Three Editions of the World Conference on Research Integrity (6th WCRI, Hong Kong 2019; 7th WCRI, Cape Town 2022; 8th WCRI, Athens 2024).

Type of Study	6th WCRI						7th WCRI						8th WCRI					
	N	Registered		Verified			N	Registered		Verified			N	Registered		Verified		
		p	%	v	%tot	%reg		p	%	v	%tot	%reg		p	%	v	%tot	%reg
Qualitative	82	19	23				35	12	34				63	16	25	15	24	94
Quantitative	125	33	26				49	16	33				80	26	32	22	27	85
Qual & Quant							18	5	28									
Total	207	52	25	23	11	44	102	33	32	20	20	61	143	42	29	37	26	88

Note: N = sample size; p = no. studies claimed registered; % = percentage studies claimed registered: $\frac{p}{n} \times 100$; v = no. studies verified registered; %tot = percentage studies verified registered against all studies: $\%\text{tot} = \frac{v}{N}$; %reg = percentage studies verified registered against studies claimed verified (can be verified or non-verified): $\%\text{pre} = \frac{v}{p}$.

Table 5: Relation Between Career Stage and Registration

Career Stage	Registered	7th WCRI # studies (%)	8th WCRI # studies (%)
Early	Yes	19 (45)	21 (31)
	No	23 (55)	46 (69)
Middle	Yes	8 (31)	12 (28)
	No	18 (69)	31 (72)
Established	Yes	6 (18)	6 (29)
	No	28 (82)	15 (71)

Discussion

We studied the prevalence of registration of empirical studies accepted as paper or poster presentations in three consecutive WCRIs, and also whether registration prevalence was associated with background characteristics of the leading applicant. Our main finding is that registration seems to stagnate at on average 28 percent of the empirical research underlying the WCRI presentations. A drawback of our studies is that the sample sizes are too modest to draw firm conclusions on the association between characteristics of the abstract and its applicant on the one hand and registration on the other hand. Furthermore, the cross-sectional nature of our study implies that drawing causal conclusions is not possible. We believe that low registration prevalence across career stage levels may possibly be related to resistance to registration among researchers, even those involved in research on research integrity. We speculate that this may be due to an aversion to perceived distrust ("why do I have to 'prove' I can be trusted?"), but also be felt as time-consuming or as a break with past routines ("I have never registered and everything went well; why change that?"). For the most recent two WCRIs, we asked applicants why they did not register, but only few applicants gave useful answers, so that we cannot conclude much based on empirical information. This calls for more research, replacing speculation with facts.

Although for 7th WCRI, registration was clearly more common among early career researchers than among advanced career researchers, for 8th WCRI results this trend was not

found. For early career researchers, we might expect improvements from skills training on how to register research (e.g., [29]), but perhaps this culture change needs more time to settle on a larger scale. Also, being trained does not mean that registration is always an obvious course to take for early career researchers (e.g., see also [30]), who often work on research for their PhD thesis. They consider their doctoral research as a first important step in a scholarly career and might suffer from a high degree of anxiety of being scooped and might not realize that registrations can be embargoed. In addition, researchers may be afraid that unexpected or non-significant results have a negative effect on the perceived quality of their study [31]. Accumulating experience will possibly make researchers feel more comfortable, and changing or correcting research plans along the way based on progressing insight can be registered as well without suffering loss of face. Acknowledging that research registered previously as confirmatory now has become exploratory for the parts that were changed is then important, especially when the changes are made relatively late and can be data-driven.

Based on our three studies, we see no reason to be very optimistic. Researchers of research integrity should do better and follow the guidance contained in the Amsterdam Agenda. Several authors ([21, 31, 32]) have suggested possible barriers keeping researchers from registering their research. Oddly, many researchers in our study did not recognize the importance of registration, suggesting that they do not feel the urgency of transparency and the need for accountability. Additional research, also involving focus groups and in-depth interviews, should explore avenues to convince them to register their empirical research.

For studies which claimed to have been registered, it was necessary to ascertain whether they were of sufficient quality (e.g., complete, understandable; see the Amsterdam Agenda [28] for a comprehensive overview of quality criteria). It turned out that many claimed registrations could not be confirmed to exist or to be of adequate quality.

We call attention to the dynamics of the research process: Not everything can be foreseen, new insights may arise throughout a study, or the collected data may have unexpected properties that force researchers to reconsider initial choices for the statistical analysis. Researchers need to make these choices using articulated arguments, thus providing full transparency, and registering changes in research plans as the research develops. Rubin [14] refers to this aspect of providing insight as contemporary transparency and argues that it may be even more important for increasing the credibility of research than transparency at the time of the first registration. Essential for contemporary transparency is public data and code sharing [33, 34]. Finally, for registration to be successful it must be made as easy as possible. The guidelines for registration need to be short, clear, and accessible; but also specific, precise, and exhaustive. Properly designed registration forms may help to reduce registration barriers.

In addition to our studies performed at the WCRIs, similar studies at other leading conferences across disciplinary fields also may provide interesting information. We have not found such studies, but once they are conducted, combining the information about registration from different sources will complete the picture and may provide well-founded suggestions for future interventions to increase researchers' preparedness to register. Arguably, registration rates may substantially improve when journals or funding agencies demand it. Furthermore, universities and research institutes must be encouraged to mandate registration and data sharing by their employees. We believe that currently mandatory registration should be restricted to hypothesis-testing studies. There is little agreement on the importance of registration of explorative and qualitative research, so for these types of research we suggest to make it recommended at most.

Abbreviations

OSF: Open science framework; QRP: Questionable research practices; RRP: Responsible research practices; WCRI: World Conference on Research Integrity

Declarations

Ethics approval and consent to participate: The 7th WCRI study was approved by both the Ethical Review Board of Tilburg University, the Netherlands (reference no. RP549), and the South African National Health Research Ethics Council (protocol no. REC 8/23/02/22). The 8th WCRI study was approved by the Ethical Review Board of Tilburg University, the Netherlands (reference no. TSB_RP1427).

Consent for publication: not applicable.

Availability of data and materials: Anonymized datasets and associated R-scripts used for the analyses are available at our OSF project pages, see https://osf.io/w4dz9/ and https://osf.io/4hmcw/ .

Competing interests: LB is chairing the WCRI Foundation and was cochair of the 5th, 6th, 7th, and 8th WCRI.

Funding: not applicable.

Author's contributions: WE, KS & LB contributed to the design of the study and drafting and finalizing the manuscript. WE and KS performed the data analyses. KS presented the results during the final plenary sessions at 6th and 8th WCRI, LB presented the results during the final plenary sessions at 7th WCRI. All authors read and approved the final manuscript.

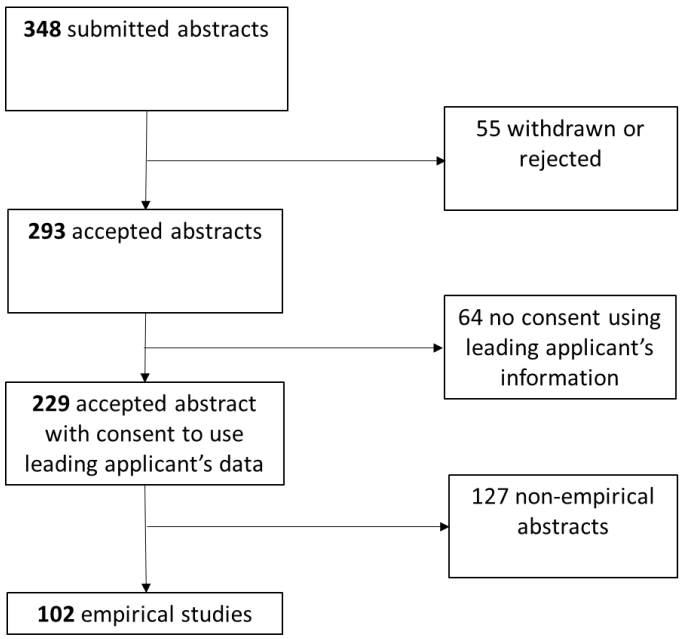
Acknowledgments: not applicable

Footnotes: not applicable

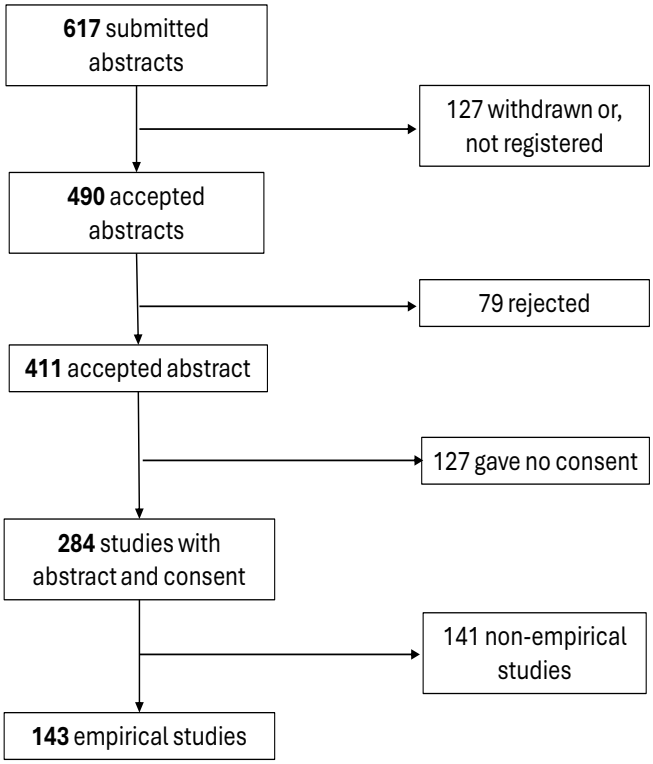
Appendix

Figure 1 shows a flowchart of the selection of abstracts for the 7th WCRI study. In total, 348 abstracts were submitted, of which 55 abstracts were either withdrawn or rejected by the WCRI's program committee. For 64 of the remaining 293 abstracts (22%), the leading applicant gave no consent for using their anonymized data for our study, resulting in a study sample of 229 abstracts (116 oral presentations and 113 poster presentations). The criterion that it should concern an empirical study further reduced the sample to 102 abstracts, together representing 86 unique leading applicants. Figure 2 shows a flow chart for the 8th WCRI study. With some minor details, the decisions taken that led to the final research sample were similar to those taken for 7th WCRI. Therefore, we refrain from a detailed description of the process, but notice that the research samples for 7th and 8th WCRI contained 35% and 29% of the total number of accepted abstracts, respectively.

Appendix Figure 1: Selection of presentation and poster proposals for 7th WCRI (Cape Town)



Appendix Figure 2: Selection of presentation and poster proposals for 8th WCRI (Athens)



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