



Analysis of major programs in the field of health science funded by the National Natural Science Foundation of China between the years 2010 and 2018

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Background: The National Natural Science Foundation of China (NSFC) plays an important role in supporting scientific research. The Major Program is one of the most important types as it improves the capability of indigenous innovation in China's basic research efforts. Thus, numerous scientists and researchers are concerned about its application and funding aspects.

Methods: The information and data of the Major Program were collected from guide books and annual reports released between the years 2010 to 2018 via the NSFC official website. We conducted further analysis to discover any regularities and tendencies.

Results: From 2010 to 2018, a total of 21 areas in the field of health science were funded by the NSFC and eventually 87 projects were approved, totaling 32.8 million CNY. The applicants funded were from 43 host institutions, 70 were males and 17 were females, and the applicants were aged between of 35 and 77 years. Of all the applicants funded, 86 had senior title while only 1 had deputy senior title. The collaboration of institutions was common in the applications.

Conclusions: Several characteristics of the Major Program could be found based on the analysis, which may be beneficial for the applicants in the future.

Keywords: Major program; health science; funded; National Natural Science Foundation of China (NSFC)

Submitted May 04, 2019. Accepted for publication May 16, 2019.

doi: 10.21037/atm.2019.05.66

View this article at: <http://dx.doi.org/10.21037/atm.2019.05.66>

Introduction

The National Natural Science Foundation of China (NSFC) is an institution tasked with the administration of the National Natural Science Fund from the Central Government. Since its establishment in 1986, the NSFC has comprehensively implemented a rigorous and objective merit-review system to fulfill its mission of supporting basic research and promoting socioeconomic development (1).

Among the diverse project types maintained by the

NSFC, the Major Program serves the primary needs of the scientific frontier, national economy, and social development initiatives. By conducting multidisciplinary research, it plays both a supporting and guiding role in improving the capability of domestic innovation in China's core research efforts.

Due to the importance of the Major Program, it has drawn broad concern and focus from many researchers in the field of health science. Therefore, we conducted this study to analyze the Major Program in the field of health

Table 1 Detailed information of areas in the field of health science funded by the NSFC Major Program between 2010 and 2018

Application code	Areas	2010	2011	2012	2013	2014	2015	2016	2017	2018	Sum
H01	Respiratory system	-	-	-	-	1	-	-	-	-	1
H02	Circulatory system	-	-	-	-	-	-	-	1	-	1
H03	Digestive system	-	-	-	-	-	-	-	1	-	1
H04	Reproductive system; perinatology/neonatology	-	-	-	-	1	-	-	-	-	1
H07	Endocrine system/metabolism & nutrition support	-	-	-	1	-	-	-	-	-	1
H08	Blood system	1	-	-	-	-	-	-	-	1	2
H09	Neurological and psychiatric diseases	-	-	-	-	-	-	-	-	1	1
H12	Ophthalmology	-	-	-	-	-	-	-	1	-	1
H16	Oncology	1	-	-	-	1	-	-	1	-	3
H18	Medical imaging and biomedical engineering	1	1	-	-	-	-	-	1	-	3
H19	Medical pathogenic micro-organisms and infection	-	-	1	-	-	1	-	-	-	2
H26	Preventive medicine	-	-	-	1	-	-	-	-	-	1
H27	Chinese medicine	-	-	-	-	-	1	-	-	-	1
H28	Chinese materia medica	-	-	-	-	-	-	-	-	1	1
H30	Materia medica	-	-	-	-	-	-	1	-	-	1
Total		3	1	1	2	3	2	1	5	3	21

NSFC, National Natural Science Foundation of China.

science funded by NSFC between the years 2010 and 2018.

Methods

The information and data of the Major Program were collected from editions of guide books (2) and annual reports (3) released between the years 2010 and 2018 via the NSFC official website. Further analysis was made to discover any regularities and tendencies.

Results

Overall condition

From 2010 to 2018, a total of 21 programs in the field of health science were funded by the NSFC Major Program, and eventually 87 projects were approved, with the amount

totaling 32.8 million CNY. The detailed information is shown in *Table 1* and *Figure 1*.

Applicants' host institutions

The applicants funded were from 43 host institutions. The top ten institutions ranked are shown in *Figure 2*.

Regional distribution of applicants funded

The applicants funded were from 12 provinces and municipalities which are shown in *Figure 3*.

Gender of applicants funded

Of the applicants funded, 70 were males and 17 were females (*Figure 4*).

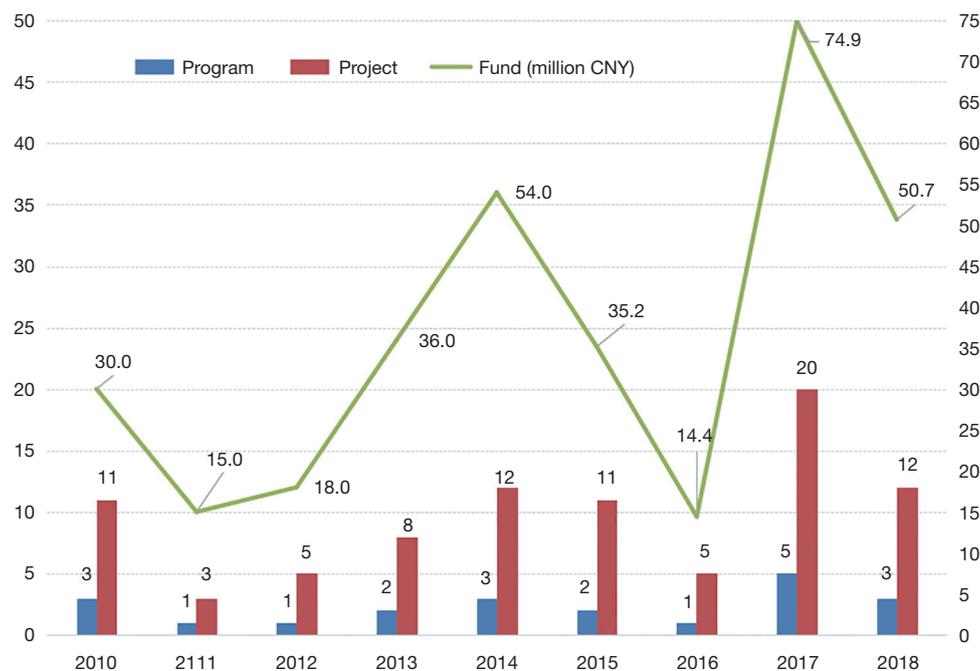


Figure 1 Number of programs and projects with corresponding fund amount in the field of health science funded by the NSFC Major Program between 2010 and 2018. NSFC, National Natural Science Foundation of China.

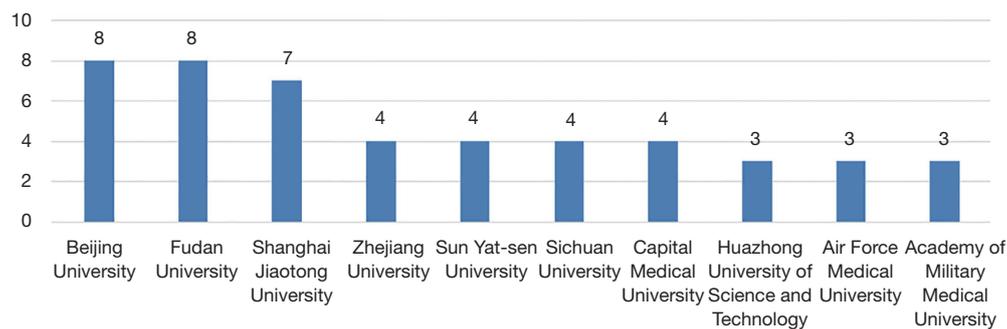


Figure 2 The distribution of applicants' host institutions in the field of health science funded by the NSFC Major Program between 2010 and 2018 (top 10 institutions). NSFC, National Natural Science Foundation of China.

Age of applicants funded

The ages of applicants funded were between 35 and 77 years, with the age group between 46 and 60 being the most common (Figure 4).

Professional qualifications of applicants

Of all the applicants funded, 86 had senior title (including

professor, researcher, and chief physician) while only 1 had deputy senior title (associate chief physician).

Collaboration of institutions

Collaboration was commonly found in the applications. Of all the applicants funded, 64 cases had cooperation between 2 institutions, and 6 cases had cooperation between

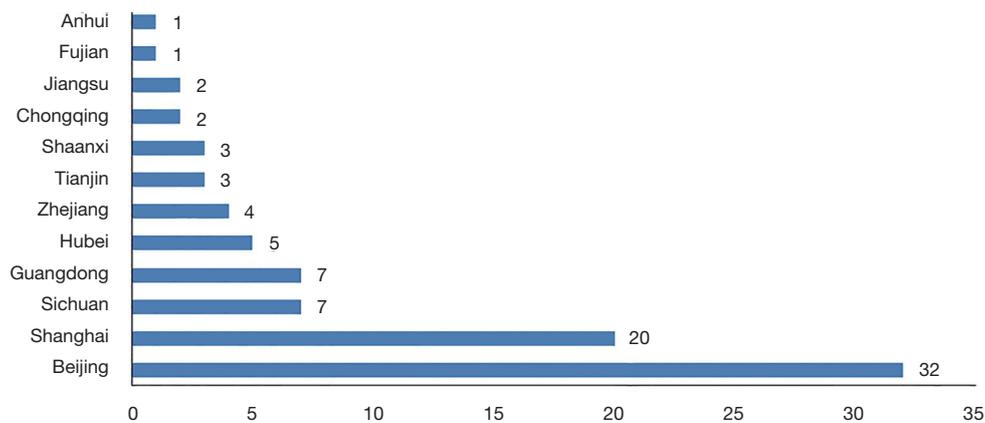


Figure 3 The regional distribution of applicants in the field of health science funded by the NSFC Major Program between 2010 and 2018. NSFC, National Natural Science Foundation of China.

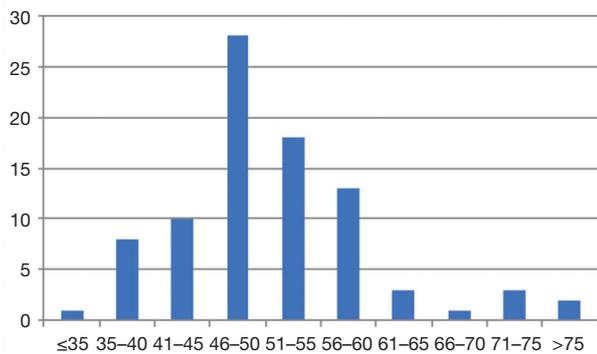


Figure 4 The ages of applicants in the field of health science funded by the NSFC Major Program between 2010 and 2018. NSFC, National Natural Science Foundation of China.

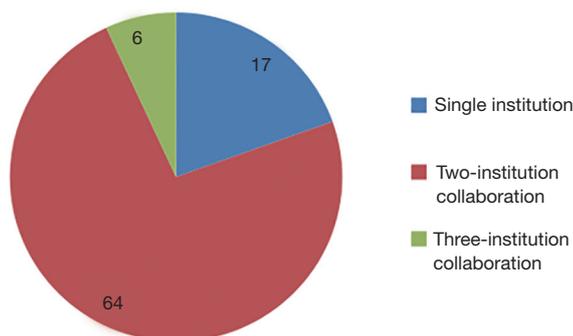


Figure 5 The collaboration of institutions in the field of health science funded by NSFC Major Program between 2010 and 2018. NSFC, National Natural Science Foundation of China.

3 institutions (*Figure 5*).

Discussion

Several prominent characteristics of the Major Programs could be gleaned based on our above analysis which may be beneficial for the applicants in the future.

Major Programs cover nearly all health research areas. Among them, blood system, oncology, medical imaging, biomedical engineering, medical pathogenic micro-organisms and infection account for the majority part of the funding.

Universities and institutes of Chinese academy of sciences show great strength on the ability of medical scientific research. And they successfully dominate the number of the NSFC Major Program projects funded. Geographically, the host institutions funded appear to be concentrated in Beijing and Shanghai. At the same time, collaboration of institutions seems to be advantageous.

The principle investigators of Major Programs are mostly with the age of 50, although the number of PIs in their 40s are growing.

Generally, the eligible applicants should have excellent academic accomplishments, with considerable influence and team ability. Meanwhile, applicants should follow the guidelines when writing proposals, focus on key scientific issues with strategic and fundamental significance, concentrate on interdisciplinary scientific targets, and pay attention to coordination and links with other national scientific programs. The research team should have an adequately prepared pilot study, sufficient supporting conditions, innovative ability, and a number of high-level academic leaders.

Acknowledgments

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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Cite this article as: Lei R, Liu Q, Wang Y, Wang H, Shen Y. Analysis of major programs in the field of health science funded by the National Natural Science Foundation of China between the years 2010 and 2018. *Ann Transl Med* 2019;7(12):268. doi: 10.21037/atm.2019.05.66