

Prevalence of Research Culture in BNYS Education in India

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Abstract

Original Research Article

Objective: To study the prevalence of research culture in Bachelor of Naturopathy and Yogic Sciences Course (BNYS) curriculum imparted in various colleges in India. **Methods:** A google form questionnaire link was sent across to students who are currently studying BNYS program through emails and WhatsApp. The total number of completely filled google form received is (n=285). In our survey, the respondents were fully informed about the aims of the survey and the respondent's right to confidentiality has been respected and any legal requirements on data protection has been strictly adhered to. **Results:** 93.3% respondents are aware of research and its importance while 2.1% reported NO and 4.6% reported of not being sure about it, when asked if they are aware of research and its importance. Less than three quarters of the respondents (71.2%) are aware of various databases and indexes for healthcare and medicine, 16.5% reported NO and 12.3% reported Maybe(unsure). In regard to interpretation and writing research articles, 60.7% reported they are confident, 12.6% reported NO and 26.7% reported Maybe. On research paper publication, only 12.6% reported to have published a paper in scientific journal, 81.8% reported they have never published any research articles and 5.6% reported Maybe. However, only about three quarters of the respondents (79.6%) think that Naturopathy is an evidence-based medicine whereas 5.3% reported does not think so and 15.1% think otherwise. While 93% think that research is an important component of Naturopathic medicine, 1.1% does not think so and 6% reported Maybe. Notably in our survey 68.8% reported that their institution demands research in their curriculum, 20% reported NO and 11.2% reported of not being sure about it. 18.2% students reported they have not been taught to incorporate research in their studies while 69.1% reported YES and 12.6% were not sure. Less than half of respondents to our survey 41.4% reported to have participated in research project in undergraduate studies whereas 51.2% have never participated in any projects and 7.4% reported of not being sure about their participation. Apart from the 7% who responded NO and 16.1% who reported Maybe, 76.8% reported that undergraduate BNYS students should participate in research. More than three quarters, 78.9% reported that BNYS undergraduate students can plan, conduct research project and write a scientific paper however, 3.5% reported NO and 17.5% reported Maybe. When asked to rate the level of interest in research on a scale of 1 to 3, where 1 is moderate, 2 is mild and 3 is overwhelming; 1=6 (2.1%), 2=109 (38.2%) and 3= 170 (59.6%).

Keywords: BNYS, AYUSH, research culture, Naturopathy, medical research, yoga.

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INTRODUCTION

Bachelor of Naturopathy and Yogic Sciences (BNYS) is a 5 & ½ years full time undergraduate medical program offering a professional medical degree in Naturopathy and Yoga sciences in India. Total number of teaching hours amounts to an average 6000 hours approximately that includes practical or clinical teaching. The first 4 & ½ years comprises of extensive

biomedical studies and Naturopathic modalities both theoretical and practical followed by one-year rotatory internship across various hospitals [1]. The educational model is comparable to the modern biomedical programs as Naturopathic institution across India offers a standard biomedical training underpinned with requisite amount of both theoretical and practical contact class hours on anatomy, physiology, biochemistry, pathology, microbiology, forensic

medicine and toxicology, pharmacology, first aid and emergency medicine, psychiatric and psychology, modern diagnostics, obstetrics and Gynaecology along with various other Naturopathic modalities. Naturopathic medicine is comprised of Diet therapy, Fasting therapy, Acupuncture and Acupressure, Magnet therapy, Mud therapy, Hydrotherapy, Massage therapy, Chromo therapy, Air therapy, and yoga therapy [2]. The regulation of Naturopathic medicine exists at two levels in India: primary Naturopathic education which is regulated by the respective state health university and Naturopathic practice, regulated at state level by state AYUSH departments and Federal level by Ministry of AYUSH which registers qualified Naturopathy doctors at central registries. The quality and standardisation of Naturopathy practices across various Naturopathy hospitals and clinics are streamlined by National Accreditation Board for Hospitals and Healthcare Providers (NABH), an institutional member of the International Society for Quality in Health Care (ISQUA), in association with the Ministry of AYUSH, Government of India [3]. The Government of India through Ministry of AYUSH (Ayurveda, Yog and Naturopathy, Unani, Siddha and Homeopathy), in order to promote research and medical education in Naturopathy and Yoga has set up Central Council of Research in Yoga and Naturopathy (CCRYN) [2].

Like every other medical system, research is an essential and integral part of Naturopathic medicine. Today it is estimated that, 75% of the world's population uses Complementary and alternative medicine (CAM) around the world [4]. The increasing demand of CAM around the world has certainly encouraged the healthcare providers and doctors to incline more towards evidence-based medicine practice. An active participation in research is important in producing doctors and clinicians with an understanding of evidence-based medicine [5]. Medical research, on paper is an integral part of medical education in India, however, it is also the most neglected area in a large majority of our medical schools. This negligence has adversely affected research culture thereby leaving medical research in a poor state [6]. One primary reason for the major roadblock in the success of any research initiative is lack of research culture among the students and clinicians [7]. Another reason could be attributed to the lack of guidance for students and absence of critical skill in research among supervisors [8]. Any advancement in science begins with research- the mother of knowledge. It updates the whole knowledge of that subject thereby paving way for further addition, up-gradation, improvement, introduction of new and innovative discoveries [5]. A good quality medical research can aptly enhance doctor's clinical skills, improves patient care, improves medical education and minimise budgetary expenditures [9]. A lower mortality rates, greater organizational efficiency, better staff retention, higher patient and staff satisfaction was observed in health services whose clinicians conduct

more research [10]. Studies have shown that research experience as a medical student is strongly associated with postgraduate research involvement. These research experiences can help improve students' skills in searching and critically appraising the medical literature, develop independent learning, and writing research papers. Student research can also contribute to the published research output of an institution [11]. However, students' participation in research during the undergraduate years may not be very easy due to various obstacles and challenges that result in a reduced number of research students. Medical students are crucial to the future of medicine and medical practise. An appropriate strategies and necessary measures are essential to foster the early development of crucial skills for clinical practice [12]. In this study, the authors wish to understand the prevalence of research culture and their attitude towards research during their undergraduate program in various Naturopathic schools across India.

METHODOLOGY

This is a descriptive study to understand the prevalence of research culture in various schools of Naturopathy and Yoga sciences across India. A google form questionnaire link was sent across to students who are currently pursuing their BNYS program across India through emails and WhatsApp communication. Total 285 completely filled Google forms were received which were filled by the participants studying BNYS in various Naturopathic schools across India. In our survey, the respondents were fully informed about the aims of the survey and the respondent's right to confidentiality has been respected and any legal requirements on data protection has been strictly adhered to.

RESULTS

Students across 20 Naturopathic schools affiliated to various universities participated in the survey where a questionnaires comprising thirteen points were asked. The analysis presented herein is on the 285 respondents currently studying Bachelor of Naturopathy and Yogic Sciences (BNYS), a professional medical (AYUSH) program across India. The details of the results are highlighted in Table 1 (Fig 1).

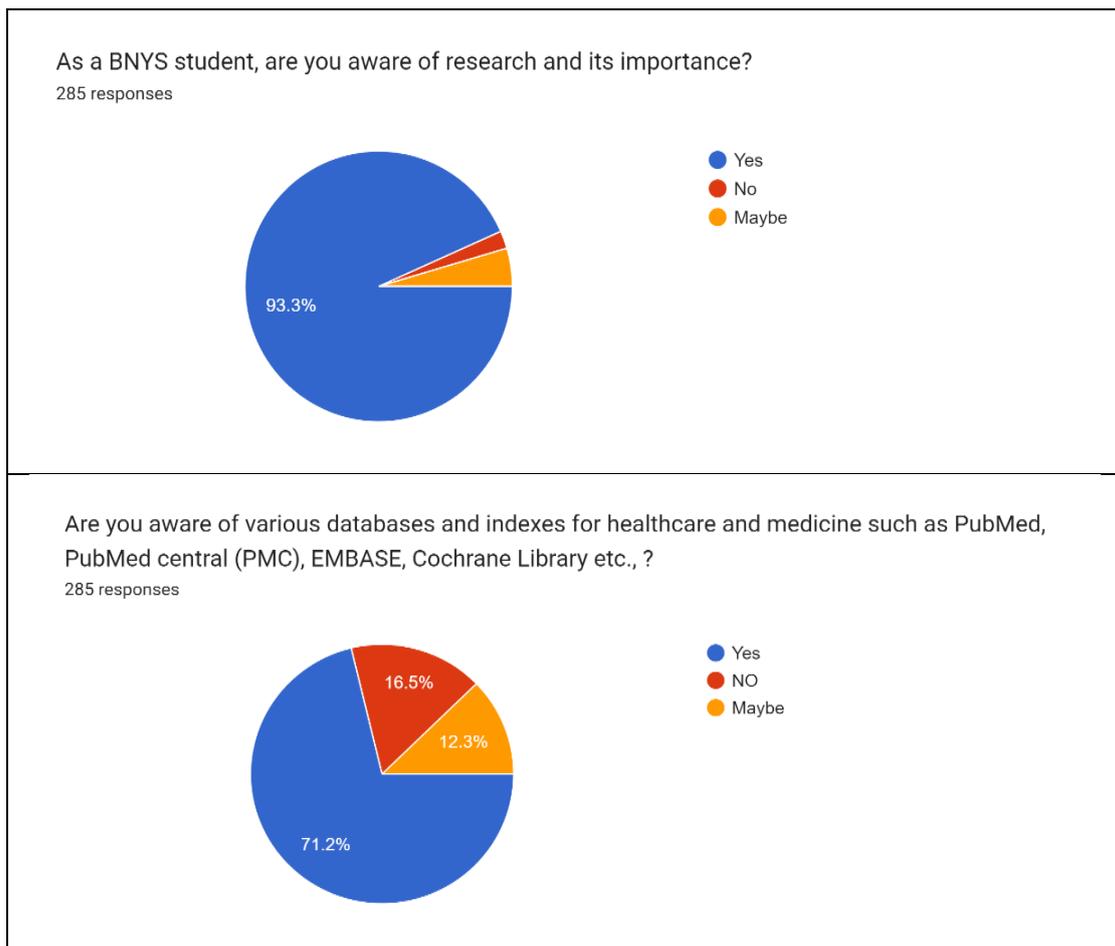
An overwhelming number of the respondents (93.3%) are aware of research and its importance while (2.1%) reported that they are not aware of it and (4.6%) reported of not being sure about it. Less than three quarters of the respondents (71.2%) are aware of various databases and indexes for healthcare and medicine such as PubMed, PubMed central (PMC), EMBASE, Cochrane Library etc, 16.5% responded that they are not aware of it and 12.3% are not sure about the basic medical research database and indexes. In regard to interpretation and writing research articles, 60.7% reported that they are confident, 12.6% reported

of not being confident and 26.7% reported that they are not sure about interpretation and writing research papers (Fig 1.1). On research paper publication, only 12.6% reported to have published a paper in scientific journal, 81.8% reported that they have never published any research articles and 5.6% reported that they were not sure about the publication. However, only about three quarters of the respondents (79.6%) think that Naturopathy is an evidence-based medicine whereas 5.3% of the respondent does not think so and 15.1% think otherwise. While 93% thinks that research is an important component of Naturopathic medicine, 1.1% does not think so and 6% reported of not being sure if research is an important part of Naturopathic medicine.

Notably in our survey 68.8% responded that their institution/university demands research in their curriculum, 20% reported that their university doesn't demand for it and 11.2% reported of not being sure about it (Fig 1.2). In our dataset 18.2% students reported that they have not been taught to incorporate research in their studies while 69.1% reported they have been taught to incorporate research in their studies yes and 12.6% were not sure whether or not. Less than half of respondents to our survey 41.4% reported to have

participated in a research project in the undergraduate studies whereas 51.2% have never participated in any projects and 7.4% reported of not being sure about their participation in any research projects. Apart from the 7% who responded NO and 16.1% who reported Maybe, 76.8% reported that undergraduate BNYS students should participate in research (1.3). More than three quarters, 78.9 % reported that BNYS undergraduate students can plan, conduct research project and write a scientific paper however, 3.5% reported NO and 17.5% are not sure about it. When asked to rate the level of interest in research on a scale of 1 to 3, where 1 is moderate, 2 is mild and 3 is overwhelming; 1=6 (2.1%), 2=109 (38.2%) and 3= 170 (59.6%) (Fig 1.4). Some of the responses on descriptive question on "if the undergraduate BNYS students should participate in research? If yes why? Please mention." has been enlisted in table 2 (Fig 2.0).

The data indicates that the number of BNYS undergraduates interested in research is overwhelmingly high which is a positive aspect as BNYS is still at its developmental stage compared to the rest of the medical system in the country.



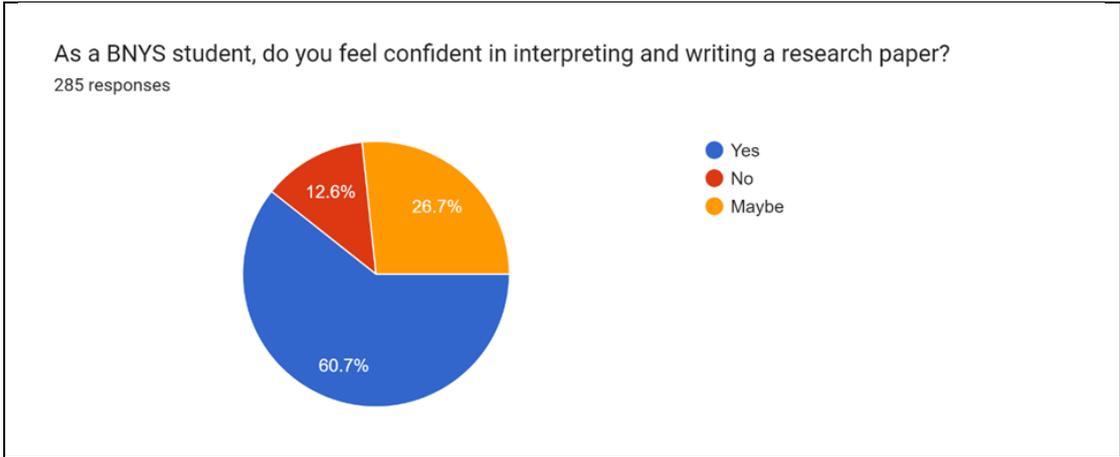


Fig 1.1

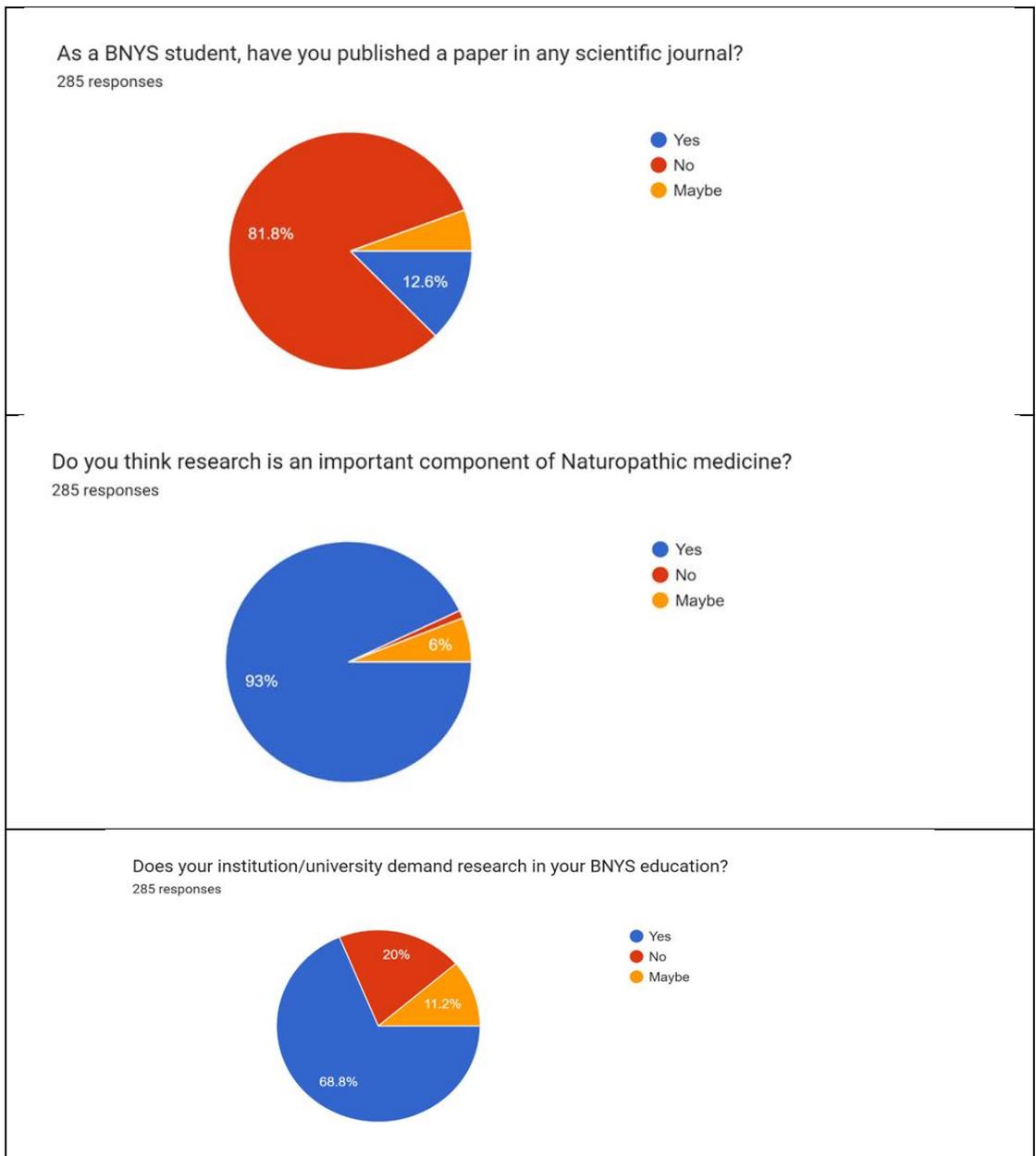
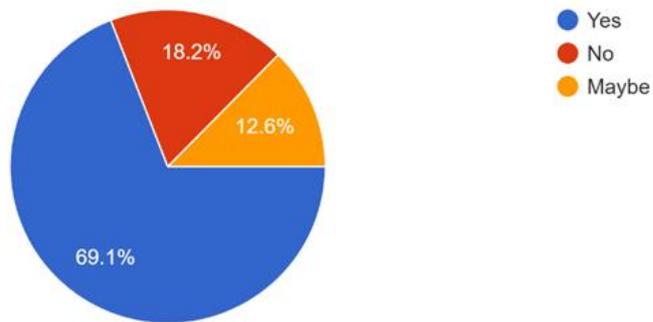


Fig 1.2

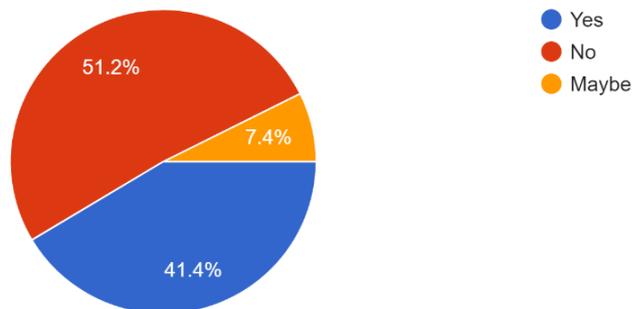
As a BNYS student, have you been taught to incorporate research in your studies?

285 responses



As a BNYS Student, have you ever participated in a research project in your undergraduate studies?

285 responses



Do you think undergraduate BNYS students should participate in research?

285 responses

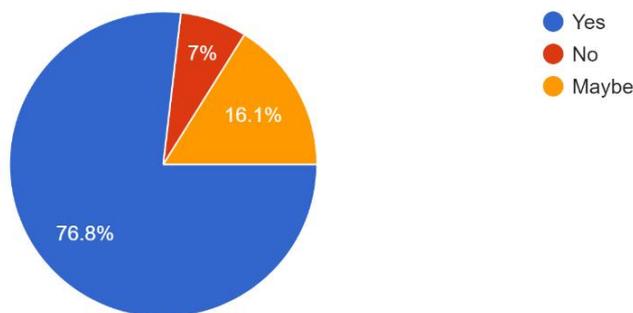


Fig 1.3

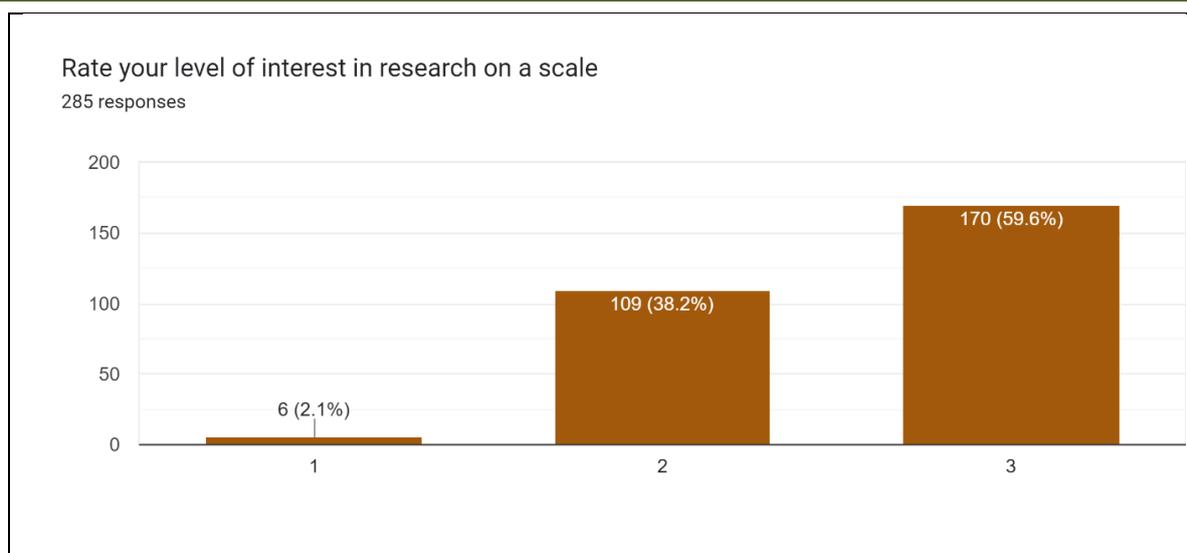


Fig 1.4

Sl. No	Questions	YES	NO	MAYBE
1	As a BNYS student, are you aware of research and its importance?	266 (93.3%)	6 (2.1%)	13 (4.6%)
2	Are you aware of various databases and indexes for healthcare and medicine such as PubMed, PubMed central (PMC), EMBASE, Cochrane Library etc?	203 (71.2%)	47 (16.5%)	35 (12.3%)
3	As a BNYS student, do you feel confident in interpreting and writing a research paper?	173 (60.7%)	36(12.6%)	76 (26.7%)
4	As a BNYS student, have you published a paper in any scientific journal?	36 (12.6%)	233 (81.8%)	16 (5.6%)
5	do you think Naturopathy is an evidence-based medicine?	227 (79.6%)	15 (5.3%)	43 (15.1%)
6	Do you think research is an important component of Naturopathic medicine?	265 (93%)	3 (1.1%)	17 (6%)
7	Does your institution/university demand research in your BNYS education?	196 (68.8 %)	57 (20%)	32 (11.2%)
8	As a BNYS student, have you been taught to incorporate research in your studies?	197 (69.1%)	52 (18.2%)	36 (12.6 %)
9	As a BNYS Student, have you ever participated in a research project in your undergraduate studies?	118 (41.4%)	146 (51.2 %)	21 (7.4%)
10	Do you think undergraduate BNYS students should participate in research?	219 (76.8 %)	20 (7%)	46 (16.1 %)
11	Do you think BNYS undergraduate students can plan, conduct research project and write a scientific paper?	225 (78.9%)	10 (3.5%)	50 (17.5%)
12	Rate your level of interest in research on a scale 1 to 3	1=6 (2.1%)	2=109 (38.2%)	3= 170 (59.6%)

Fig 1: Questions and responses

Top ten best response:

- Research should definitely be a part of any medical education. It gives us strong sense of interpretable knowledge and confidence in our practice...
- To improve and spread the upcoming course like BNYS, research is necessary and mandatory for every graduate of BNYS to participate in it.
- Whenever research become mandatory in UG level we will get to know many scientific reasons, solutions and answers for our doubts
- If we start researching at lower level it will help us in master's and PhD level. We will know how to research
- it will enhance skill as well as new dimensions of scope would be generated and get more recognition and acceptance among the medicine community
- Students are able to explore the effects of applying new thought processes through study and testing. Research can find answers to things that are unknown, filling gaps in knowledge.
- Research helps update one's clinical practice and keep them up to date about current trends in the field
- In order to build a robust foundation in ever growing scientific world
- Research seems the only way to convince the modern medical fraternity
- Scientific proof of naturopathy comes from well published research.

Fig 2.0: Do you think undergraduate BNYS students should participate in research? if yes, why? Please mention

DISCUSSION

In recent years, the research environment and culture in India has definitively evolved progressively. Clinical research in any medical education is essential to empower the healthcare practitioner with best skills and practices for optimal treatment delivery and also tackle many challenging cases efficiently. Research in medical education paves way to safer and cost-effective new treatment modalities that could cater the needs of various underlying health issues in today's context [13]. It also enriches the medical students and healthcare practitioners with the knowledge about the latest treatments and advancements in various medical practices.

Today's healthcare system is overburdened with ample of chronic lifestyle, non-communicable diseases such as Diabetes, Obesity and Hypertension etc. The arsenal available in the cabinet of modern medicine is not enough to tackle the multitude of such diseases. The resurgence of Complementary and Alternative medicine such as Naturopathy is indeed a potential relief in our fight against such mammoth diseases. There are many Naturopathic modalities with interesting effects and results on various diseases however, the lack of sufficient proof or evidences denies the credibility of those potential modalities [14]. Through evidence-based practice, Naturopathic medicine can be rigorously evaluated to provide credible evidence of effectiveness or lack thereof [15]. Our study indicates that most of the BNYS undergraduates (93.3%) are aware of research and its importance which indeed is a positive aspect of the curriculum. However, only 60.7% feel confident in interpreting and writing a research paper, of which, only 12.6% reported to have published a paper in scientific journal. The reason behind low numbers of publications could be due to late sensitization of research education as most of the BNYS schools teaches research methodology in the final or 4th year of the program. Undergraduates BNYS in some Naturopathic schools are required to submit their dissertations however only few papers get published and most of them are filed in drawers and do not see the light of day. This speaks volumes of absence of critical skills in research among supervisors and also the lack of guidance and direction for students. An inclusion of basic research methodology and involvement of undergraduates in research projects during the initial years of the program could foster research culture and meet the demands of research and publications in Naturopathic medical school. The survey also indicates that 76.8% of BNYS students think they should also participate in research activity which is a good number indeed. However, only 41.4% respondents have said to have participated in a research project which is very low indeed. Non-involvement of medical undergraduates in research is one key reason behind the low output of medical research and research publications. This may not be

necessarily due to lack intelligence or initiative among students rather it's just that they do not have a proper direction. Mostly, medical teaching institutions serve as the epicentres of various biomedical research around the world. Efficient policies to encourage biomedical research at medical colleges will certainly result in socioeconomic and health gains [16]. Perhaps, the respective schools and universities should contribute more so that the undergraduate students could learn and participate more efficiently. Most of the respondents believe that participating in research activities could help them perform better at higher education level, improve their knowledge and skills and make Naturopathic medicine an EBM. Through our survey, it is understood that the zeal to learn research is overwhelmingly high among the undergraduates across various Naturopathic schools in India.

The objective of this study is not to assess the quality of research provided across various Naturopathic schools but rather to understand the perspective of BNYS students towards research. However, it is also understood that many Naturopathic schools might not be endorsing or inculcating adequate research culture among the students in their respective schools. A research culture in undergraduate medical education aims to advance their knowledge, skills and professionalism in Naturopathic medical practices. It also empowers medical students with better understanding and evaluating medical educational systems. This could be achieved by focusing on the grassroot level on the fundamentals of research methodology and its relevance to our modern world. Young undergraduates are the ambassadors and the future of the Naturopathic medicine. Effort should be made to prepare them for the higher roles as science and technology continues to evolve progressively. A collective responsibility is required to develop a trend of research culture among the professionals and requires at the same time continuous evaluation and implementation [17]. The ever-growing demands of the need to make Naturopathy a strong evidence-based medicine is still a distant dream unless the young minds are taught to practice research culture in their respective domains. A need for quality research is the need of the hour if we wish to thrive along with the ever-growing scientific community.

Furthermore, along with the need for quality research education and methodology, there is a need for establishing world class research infrastructure, providing quality research work and results to cater the needs of the modern healthcare system. All these practices could harbour a well-practiced research culture among the young undergraduates and thus build a suitable ecosystem that could propel Naturopathy and Yoga sciences as an evidence-based medicine, a medical system second to none.

Future Directions

Research methodology should be taught at the initial stage of the BNYS programs and not only the final year, these could enable and equip students with better knowledge and skills in various medical research. A well-designed research curriculum from basic to advance research methodology should be taught extensively at all levels of BNYS programs. Each Naturopathic school may set up a specialised research and development (R&D) cell that can actively demonstrate and execute various research projects at national and international level. The institutions may also actively sponsor various research projects, organise research seminars, workshops, Faculty Development programs, continue medical education (CME), National and International conferences that could boost the research culture among the undergraduates. Steps should be taken that the students be encouraged to do research publications during the undergraduate program. Moreover, various private and public research funding agencies such as Non-Governmental Organisations, Food and Drug Administration (FDA), Ministry of health and Ministry of AYUSH can help the system grow by funding various research projects. Federal governments with the help of Corporate Industries should find ways to create funding opportunities that could help budding Naturopaths to take up research projects at small levels which could make huge impacts in streamlining the BNYS Curriculum inclined towards research cultures at various educational institutions.

CONCLUSION

The current status of Naturopathic medical research in India is unsatisfactory as evidenced by the low output of high-quality research published across various medical journals. The need for reviewing and reviving research culture among the Naturopathic professionals is very essential. One effective way to meet this demand is by sensitizing or exposing young BNYS undergraduates to some component of research. The central and state AYUSH ministry, affiliating universities, academicians, research scholars and the professional Naturopathy and Yoga community as a whole should work together to build a strong ecosystem for sustainable and efficient Naturopathic system of medicine.

Abbreviations:

BNYS: Bachelor of Medicine and Yogic Sciences
 AYUSH- Ayurveda Yoga & Naturopathy Unani,
 Siddha and Homeopathy
 EBM- Evidence-based Medicine
 FDA- Food and Drug Administration

Author Contribution Statement

Author 1: Tokika Yephthomi; survey design, collection analysis, interpretation of data, first draft and revising article

Author 2: Sangeeth Somanadhapai; survey design, drafting and critical evaluation of the article. Author 3: Apar; Final draft editing and critical evaluation
 Author 4: Salman; Survey design, data interpretation, revision of first draft and final draft
 Author 5: Sanjay Sharma; drafting and revising first draft, data collection, revising final draft and critical evaluation

Conflict of Interest:

The authors have no conflicts of interest to declare. Authors have seen and agree with the contents of the manuscript and there is no financial interest to report.

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