

Response Rate of Sero-reactive Blood Donors to Notification and Counselling

Wskaźnik odpowiedzi na powiadomienia i porady od seroreaktywnych dawców krwi

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Summary

Background. *Sero-reactivity disclosure to blood donors is an important issue of public domain. The sensitivity of situation demands both confidential as well as trust laden atmosphere while notifying them. Our aim was to assess and analyze the response rate of sero-reactive donors towards post-donation notification and counselling.*

Material and methods. *Donors reactive for any transfusion transmitted infections were notified of their results and called to blood bank for counseling (January 2016 to December 2017). The notification process included one postal and two telephonic communications. Their privacy was maintained throughout the whole process. Responders were counseled by the medical officer and subsequently referred to the concerned specialty for further management.*

Results. *Among 30,343 voluntary blood donors (96% males) 65.2% (n = 19 784) were repeat donors. Total 0.42% (n = 129) cases with reactive screening test results (0.30% HBV; 0.06% HIV; 0.006% HCV; 0.04% syphilis and 0.006% malaria) were evaluated. Prevalence of HBV and HIV were higher among first time donors (0.61% and 0.12%) than in repeat donors (0.14% and 0.02%) respectively (p = 0.002). Overall 58% (n = 75/129) donors responded to notification and counseling. Response among repeat donors (67.5% [n = 27/40]) versus first time donors (54.0% [n = 48/89]) was better and statistically significant (p = 0.05). The response rate for Malaria, HIV, Syphilis, HBV and HCV was 100%, 78%, 77%, 51% and 50%, respectively. Inaccurate donor demographics (wrong address and phone number) resulted in our inability to notify 11.6% (n = 15) cases. Major factors hindering the response rate were donors' inability to be present for a post-test discussion either due to far distance (> 100 miles) and/or their busy schedule.*

Conclusion. *Good response was noted among repeat blood donors. Donor education and repeated attempts to communicate with the sero-reactive donors would improve the response rate.*

Key words: Blood donor notification, transfusion transmitted infections, post-test discussion

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Streszczenie

Wstęp. Ujawnianie seroreaktywności u dawców krwi jest ważnym problemem zdrowia publicznego. Jest to szczególna sytuacja wymagająca zarówno zachowania poufności, jak i atmosfery zaufania w trakcie przekazywania tej informacji. Celem autorów była ocena i analiza odsetka odpowiedzi u seropozytywnych dawców na powiadomienia i rozmowy po donacji.

Materiał i metody. Dawcy, u których stwierdzono seroreaktywność w odniesieniu do jakiegokolwiek zakażenia przenoszonego przez transfuzję, zostali powiadomieni o wynikach badania i wezwani do banku krwi na konsultację (w okresie od stycznia 2016 r. do grudnia 2017 r.). Proces powiadamiania obejmował jedną informację listowną i dwie rozmowy telefoniczne. W ciągu całego procesu zachowano zasady prywatności i poufności. Osoby, które odpowiedziały na powiadomienie, odbywały poradę lekarską, a następnie były kierowane do odpowiedniego specjalisty w celu dalszego postępowania diagnostyczno-lecniczego.

Wyniki. Spośród 30 343 dobrowolnych dawców krwi (96% mężczyzn) 65,2% ($n = 19\ 784$) oddawało krew wielokrotnie. Ogółem stwierdzono 0,42% ($n = 129$) przypadków z pozytywnymi wynikami badań przesiewowych (0,30% HBV; 0,06% HIV; 0,006% HCV; 0,04% kiła i 0,006% malaria). Częstość występowania HBV i HIV była wyższa wśród osób, które oddawały krew po raz pierwszy [0,61% i 0,12%] niż w przypadku dawców wielokrotnych (odpowiednio 0,14% i 0,02%; $p = 0,002$). Ogółem 58% ($n = 75/129$) dawców odpowiedziało na zgłoszenia i stawiało się na wizytę. Odpowiedź wśród dawców wielokrotnych (67,5% [$n = 27/40$]) była lepsza niż w przypadku osób oddających krew po raz pierwszy (54,0% [$n = 48/89$]), a różnica była statystycznie istotna ($p = 0,05$). Wskaźnik odpowiedzi u osób, u których wykryto malarię, HIV, syfilis, HBV i HCV wynosił odpowiednio 100%, 78%, 77%, 51% i 50%. Niedokładne dane demograficzne (zły adres i numer telefonu) spowodowały, że nie udało się powiadomić dawców w 11,6% [$n = 15$] przypadków. Głównymi czynnikami utrudniającymi szybkość odpowiedzi były niemożność zgłoszenia się dawców na rozmowę po badaniu ze względu na odległość [> 100 mil] i/lub ich napięty harmonogram.

Wniosek. Wśród wielokrotnych dawców krwi odnotowano wysoki wskaźnik odpowiedzi. Edukacja dawców i wielokrotne próby komunikacji z seropozytywnymi dawcami poprawiłyby wskaźnik odpowiedzi.

Słowa kluczowe: powiadomienie dawcy krwi, zakażenia przenoszone drogą transfuzji, rozmowa po badaniu

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Introduction

Receiving blood transfusion although beneficial imposes, quite often, a definitive risk of transfusion transmitted infections (TTI) for the recipients. National guideline mandates that safe blood is the universal right of all recipients and at least all donated blood be fully screened for infectious agents such as Hepatitis B virus (HBV), Hepatitis C virus (HCV), Human immunodeficiency virus (HIV), Syphilis and Malaria [1]. This will enhance blood safety and reduce sero-prevalence in donated blood. Blood transfusion services have a dual responsibility towards ensuring the safety of both donors as well as patients. Of all the aspects towards blood donor's safety, their notification and

post-donation counseling remains the most important domain. Blood centers are now required to obtain written consent prior to donation as to whether donors wish to be informed about a reactive test result and to direct the HIV reactive donors to Integrated Counseling and Testing Centers (ICTC) for disclosure, counseling and further workup. All the donors reactive for HBV, HCV, syphilis and/or malaria need to be appropriately informed and referred to the physician for their further management [2]. The sensitivity of the situation demands both a confidential as well as a trust laden atmosphere while notifying and counseling them, with the two-fold goal of primarily minimizing their disease burden and secondarily to reduce the risk of further transmission. Donor notification must

be done telephonically and by registered post for a one-on-one post-test discussion (PTD) and counseling as well as repeat sampling for confirmatory tests. In our country there is a deficiency of both regional and/or national database to substantiate notification and counselling success rate among blood donors, more so due to fragmented management of blood transfusion services [3]. Our primary goal therefore was to assess and analyze the response rate of sero-reactive donors to post-donation notification and counselling at our establishment.

Materials and methods

Study design

This was an observational descriptive study performed at the department of Immunohematology and Blood Transfusion over a period of two years (January 2016 through December 2017). The protocol was approved by the Institutional Ethics Committee, prior to its commencement (IEC 104/2016). As per the department protocol informed consent (regarding disclosure of sero-reactivity) was obtained from all the donors prior to donation. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional ethics committee and with the 1964 Helsinki declaration.

Donor measures

Information of all the voluntary blood donors was retrieved from the blood bank software (Easy Software Solutions, Ahmedabad, India). Donor measures included were: Donor type [First time donor (FTD); Repeat donor (RD)]; Gender; Age group; Spoken language (Kannada; Tulu; Others); Marital status and Education (Primary: up to class V completed; Secondary: up to class X completed; Higher Secondary: beyond class X).

Study methodology

Screening of blood donors' samples was performed using the routine Enzyme-Linked Immunosorbent Assay (*ELISA*) testing of markers HIV, HBV, HCV as per the mandate of national guidelines [4]. Tests performed were *ELISA* (Biorad, France) towards HBV surface antigen (HBsAg) to detect HBV, anti-HCV to detect HCV, 4th generation kits to detect p24 antigen and glycoprotein antibodies against HIV, p-LDH malaria specific antigen towards detection of malarial parasites (Qualisa, Tulip Diagnostics, Goa, India) and syphilitic Reagin antibodies detection employing the

RPR technique (CARBOGEN, Tulip Diagnostics, Goa, India). According to our department standard operating procedure (SOP), initial reactive (IR) result in screening was repeated in duplicate (where sample was tested two more times). If found repeat reactive (RR) by *ELISA* and/or one *ELISA* + Supplementary test (such as Rapid) positive, these donors qualified for notification and counseling. The strategy of notifying was primarily by means of establishing an initial telephonic communication and a postal communication (within one week of detection). This followed a second telephone call (usually within 72 hours), if no response was heard from the initial telephonic communication. HIV reactive responders were referred to the Integrated Counseling and Testing Center (ICTC) at our hospital for counseling and further confirmatory testing, while HBV, HCV, syphilis and malaria reactive donors were referred to the concerned specialties for their further management.

Donor notification process

In case of sero-reactive blood for any of the five tested markers, the unit was discarded in accordance to our department SOP and a registered postal communication was established. After postal communication, all the donors were given a direct telephone call to arrange a post-test discussion (PTD) face-to-face with the blood bank physician (BBP) at a time convenient for both donors as well as BBP. PTD included ensuring that the donors understood the meaning of the test results, their implications on own health and meeting the concerned specialty (in case of HBV, HCV, Syphilis and Malaria) and ICTC (in case of HIV) respectively. During PTD ample care was taken to avoid ambiguity and information about the test results was delivered to the donors in their spoken language. Privacy of the donors' information was kept secure by keeping the notification file (including their details) in a safe place under the lock and direct supervision of the BBP only. On attempting the initial communication, if, we didn't hear back from the donor, a second telephonic call was attempted. Donors who were completely non-compliant were eventually kept in the "No-response cohort". The reason for not attending the PTD was asked during the second telephone call and documented.

Statistical analysis

Data was entered in a spread sheet and finally analyzed using IBM SPSS Statistical package version 20 (IBM, USA). Simple descriptive statistics were expressed as frequency distribution, mean

Table 1. Blood donor demographics notified in 2016–2017**Tabela 1.** Dane demograficzne dawców krwi w latach 2016–2017

S. No	Donor characteristics	HBV N (%)	HIV N (%)	HCV N (%)	Syphilis N (%)	Malaria N (%)	Total N (%)
1	Sero-reactive donors	94 (73)	18 (14)	2 (1.5)	13 (10)	2 (1.5)	129 (100)
2	Total responders	48 (51)	14 (78)	1 (50)	10 (77)	2 (100)	75 (58)
3	Types of donors:						
	a. FTD	65 (69)	13 (72)	1 (50)	9 (69)	1 (50)	89 (69)
	b. RD	29 (31)	5 (28)	1 (50)	4 (31)	1 (50)	40 (31)
4	Age-group (years)						
	18–24	19 (20)	0 (0)	2 (100)	4 (31)	2 (100)	27 (21)
	25–34	40 (43)	10 (56)	0 (0)	5 (38)	0 (0)	55 (43)
	> 35	35 (37)	8 (44)	0 (0)	4 (31)	0 (0)	47 (36)
5	Gender						
	Male	93 (99)	18 (100)	2 (100)	13 (100)	2 (100)	128 (99)
	Female	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
6	Marital status						
	Single	27 (29)	6 (33)	1 (50)	5 (38)	2 (100)	41 (32)
	Married	67 (71)	12 (67)	1 (50)	8 (62)	0 (0)	88 (68)
7	Education						
	Primary	43 (46)	10 (56)	2 (100)	3 (23)	0 (0)	58 (45)
	Secondary	33 (35)	6 (33)	0 (0)	7 (54)	2 (100)	48 (37)
	Higher secondary	18 (19)	2 (11)	0 (0)	3 (23)	0 (0)	23 (18)
8	Spoken language						
	Kannada	58 (60.9)	12 (67)	1 (50)	9 (69)	2 (100)	82 (64)
	Tulu	21 (26.1)	5 (28)	0 (0)	4 (31)	0 (0)	30 (23)
	Others	15 (13.0)	1 (5)	1 (50)	0 (0)	0 (0)	17 (13)

± standard deviation and quantitative data was expressed as percentage. P value less than 0.05 was considered to be statistically significant.

Results

Donor demographics and age-wise distribution: Among 30,343 voluntary blood donors (96% males), 129 were sero-reactive for at least one out of five infectious markers. Mean age of sero-reactive donors was 32 ± 8.9 (18 to 58) years. On age-wise distribution majority 43% ($n = 55/129$) were in 25 to 34-year age group. Geographically majority were from Udupi district 64% ($n = 83/129$) with their main spoken language as Kannada. Overall 68% ($n = 88$) were married and 45% ($n = 58$) had primary level of education (Tab. 1).

Donor types and infection rate

Overall 65.2% ($n = 19,784$) were repeat donors and 0.42% ($n = 129$) cases were sero-reactive

for at least one out of five infectious markers (0.30% HBV; 0.06% HIV; 0.006% HCV; 0.04% syphilis and 0.006% malaria). There were 0.006% ($n = 2/30,343$) donors who showed co-infection including HIV + HBsAg and HIV + Syphilis each. For the ease of analysis both the scenarios were considered under HIV data only. Prevalence of HBV and HIV were higher among FTD (0.61% and 0.12%) than in RD (0.14% and 0.02%).

Donors contacted and response rate

On first communication, only 88.4% ($n = 114/129$) could be contacted. Of the contacted donors 34.2% ($n = 39/114$) did not respond, citing mainly far distance (> 100 miles [$n = 22/39$]) and their busy schedule ($n = 17/39$) respectively. Additionally, only 58% ($n = 75$) responded to PTD and counseling with BBP (Fig. 1). Repeat communication was attempted among the remaining 11.6% ($n = 15$) donors who could not be contacted initially. Reasons for the “Could not be contacted” cohort of donors was mainly inaccurate donor

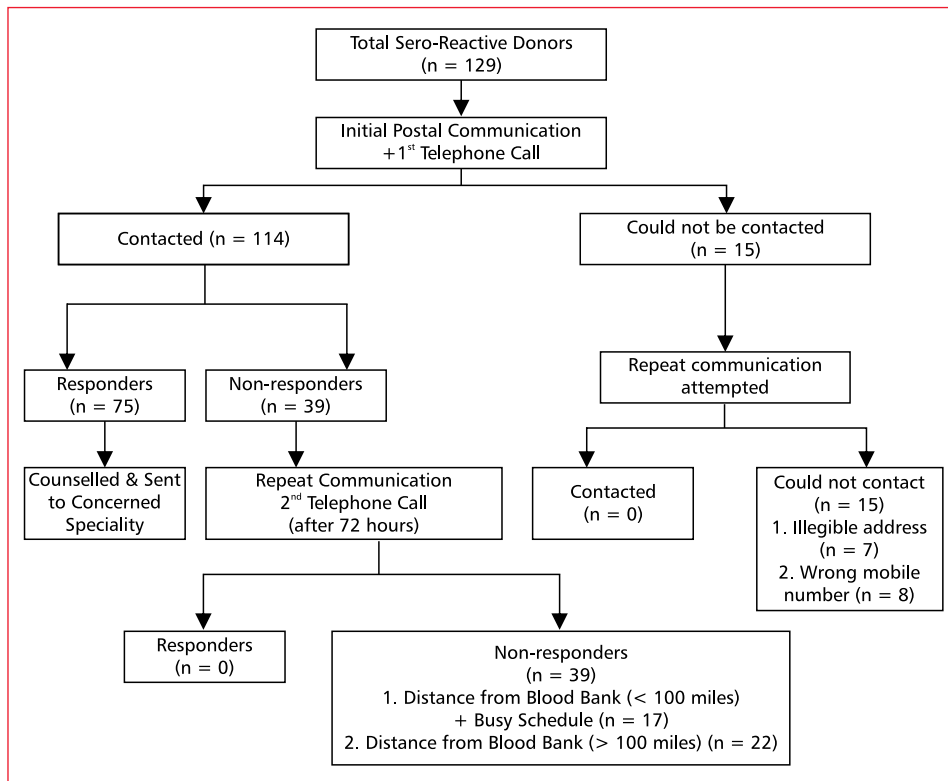


Figure 1. Flow Chart Depicting the Study Process & Results

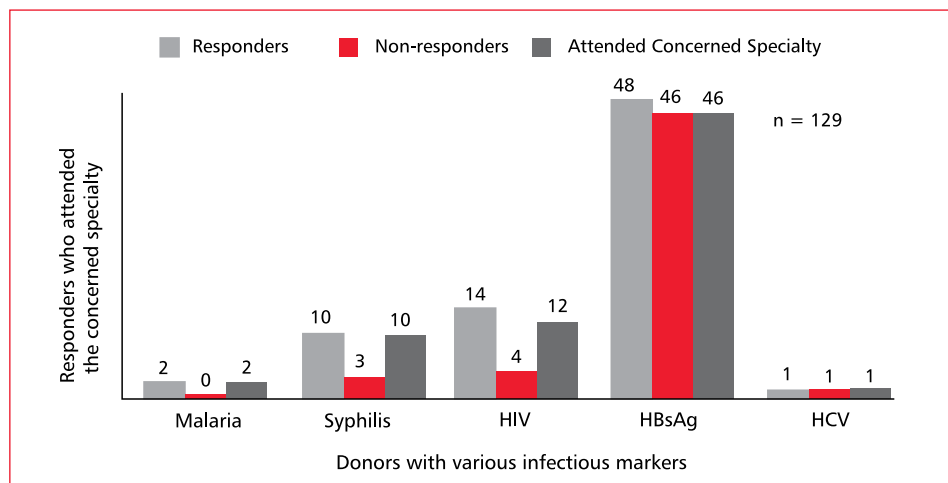


Figure 2. Responders who attended the Concerned Speciality at our Hospital

details namely, illegible address and inaccurate mobile number. Response among RD 67.5% (n = 27/40) was better as compared to the FTD 54.0% (n = 48/89) (p = 0.05). The response rate for malaria, HIV, syphilis, HBV and HCV were 100%, 78%, 77%, 51% and 50%, respectively. Majority attended the concerned speciality at our hospital itself (Fig. 2).

Discussion

Donor notification is a daunting task and poses several challenges to the health care workers/personnel. Some of the difficulties faced are donors entering their contact details inaccurately while filling their pre-donation forms (such as inaccurate postal address and/or wrong phone number). Other challenges being few donors do not respond to the

telephone calls attempted while, others hide their personal history of high risk behavior and/or activity mainly because of social stigma associated. Furthermore, there are several deficiencies present in the existing policies such as poor linkages between blood centers with ICTCs and/or medical units, lack of uniformity in the format available for referral, untrained donor counselors and lack of uniformity in the content of the letter for communication to the sero-reactive donors. Additionally, loss of their follow up compounds the existing problem.

Prevalence of TTI in India ranges from 1.8–4%, 0.4–1.09%, 0.2–1%, and 0.05–0.9% for HBV, HCV, HIV, and syphilis, respectively [5]. Prevalence of TTI in the present study was lower when compared with the existing sero-prevalence studies from our country. Reasons for lower rate of TTI prevalence in our donor population could be explained due to higher percentage of repeat regular voluntary blood donors (65%) against the frequency of first time donors (35%) at our center. Additionally, our pre-donation deferral rate is nearly 11.5%.

In an Indian study by Patel et al. 60.4% sero-reactive donors showed a positive response following donor notification and counseling [6]. In another Indian study by Agarwal et al. (involving 416 reactive donors), only 59.8% subjects attended counseling after knowing their reactive status [7]. Our results show a moderate response rate (58%) to the calls made to the sero-reactive donors. This may be attributed to a relatively lesser knowledge and understanding among the donors about various infectious markers and/or the screening test results. Additionally, perceptions regarding screening tests may vary among donors based on their socio-cultural beliefs [8]. Sharma et al. found that many donors did not know about the window period in test results and felt that it was fine for them to donate blood even if they engaged in high risk behavior since their blood would be tested for infectious markers anyway and eventually discarded if found reactive [9].

In the present study, we also found that 11.6% (n = 15) sero-reactive donors could not be contacted and informed about abnormal test results. Incomplete or inaccurate demographic details provided by donors were the main reasons accountable for this “Could not be contacted” cohort. Marker wise distribution for this cohort was HBV: HIV: HCV: syphilis: malaria — 12:2:1: 0:0. The number of sero-reactive donors in this “Could not be contacted” cohort was, however, smaller as compared to large numbers of the studies done by

Kotwal et al. and Moyer et al. (49.4% and 65.52%) respectively [10, 11].

In summary, a good response among repeat blood donors was noted. Non-responders among HBV and HCV sero-reactive donors were 49% and 50% respectively. Donor education and repeated attempts to communicate with the sero-reactive donors would improve the response rate. There is also a collective need to review the effectiveness of current donor deferral criteria which is still dependent on the goodwill of the donor regarding disclosure of his or her personal high risk behavior. More efforts are needed to improve donors’ understanding about various serological tests as well as ensuring that their accurate demographic details are gathered prior to donation.

Disclosure of potential conflicts of interest

Authors declare no conflict of interest.

Authorship contributions

Dr. Shamee Shastry and Dr. Manish Raturi contributed to the conceptualization, study design, and drafting the paper. Dr. Pruthvi Raj contributed in the data acquisition, analysis and critical evaluation of the draft.

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References

1. Guidelines for Blood Donor Selection and Blood Donor Referrals. Available from: <http://naco.gov.in/blood-transfusion-services-publications> [Last accessed on 2018 Oct 29].
2. Dontula S, Mathur A, Kamaladoss T, et al. Donor disclosure — a donor’s right and blood bank’s responsibility. *Transfusion Alternatives in Transfusion Medicine*. 2012; 12(3-4): 44–50, doi: [10.1111/j.1778-428x.2012.01157.x](https://doi.org/10.1111/j.1778-428x.2012.01157.x).
3. National Blood Policy [2014]. Available from: <http://naco.gov.in/blood-transfusion-services-publications> [Last accessed on 2018 Oct 29].
4. Saran RK. Blood Transfusion Safety and Regulatory Requirements. In: *Transfusion medicine technical manual DGHS*. 2nd ed. Ministry of Health and Family Welfare; 2003. p: 383–416.
5. Pallavi P, Ganesh CK, Jayashree K, et al. Seroprevalence and trends in transfusion transmitted infections among blood donors in a university hospital blood bank: a 5 year study. *Indian J Hematol Blood Transfus*. 2011; 27(1): 1–6, doi: [10.1007/s12288-010-0047-x](https://doi.org/10.1007/s12288-010-0047-x), indexed in Pubmed: [22379287](https://pubmed.ncbi.nlm.nih.gov/22379287/).
6. D P Patel, D. S. Patel, D. J. Bhatt, D. N. Bhatnagar, and D.M.G. Shah, “Evaluation of Response to Donor Notification of Reactive Transfusion Transmitted Infections (TTIs) Result,” *Natl J Integr Res Med*. 2012; 3(2): 20–25.

7. Agarwal N. Response rate of blood donors in the Uttarakhand region of India after notification of reactive test results on their blood samples. *Blood Transfus.* 2014; 12 Suppl 1: s51–s53, doi: [10.2450/2012.0100-12](https://doi.org/10.2450/2012.0100-12), indexed in Pubmed: [24599905](https://pubmed.ncbi.nlm.nih.gov/24599905/).
8. Roshan TM, Rosline H, Ahmed SA, et al. Response rate of Malaysian blood donors with reactive screening test to transfusion medicine unit calls. *Southeast Asian J Trop Med Public Health.* 2009; 40(6): 1315–1321, indexed in Pubmed: [20578467](https://pubmed.ncbi.nlm.nih.gov/20578467/).
9. Sharma UK, Schreiber GB, Glynn SA, et al. Retrovirus Epidemiology Donor Study. Knowledge of HIV/AIDS transmission and screening in United States blood donors. *Transfusion.* 2001; 41(11): 1341–1350, indexed in Pubmed: [11724976](https://pubmed.ncbi.nlm.nih.gov/11724976/).
10. Kotwal U, Doda V, Arora S, et al. Blood donor notification and counseling: Our experience from a tertiary care hospital in India. *Asian J Transfus Sci.* 2015; 9(1): 18–22, doi: [10.4103/0973-6247.150941](https://doi.org/10.4103/0973-6247.150941), indexed in Pubmed: [25722567](https://pubmed.ncbi.nlm.nih.gov/25722567/).
11. Moyer LA, Shapiro CN, Shulman G, et al. A survey of hepatitis B surface antigen-positive blood donors: degree of understanding and action taken after notification. *Transfusion.* 1992; 32(8): 702–706, indexed in Pubmed: [1412675](https://pubmed.ncbi.nlm.nih.gov/1412675/).