A Systematic Literature Review on Response Rates across Racial and Ethnic Populations

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ABSTRACT

Objective: To conduct a systematic review examining whether minority ethnic populations participate in surveys as actively as the majority ethnic population.

Methods: A literature and grey literature search was conducted using five online databases as well as government databases and reports, including the search terms: survey response rates or non-response rates and racial or ethnic populations (White, African American, Asian, and Hispanic); survey modes or methods (mail, telephone, face to face, e-mail); and response bias (non-response bias, response bias or social desirability). The search was limited to English language and articles published from January 1990 to June 2009. Article exclusions were based on further inclusion and exclusion criteria.

Synthesis: Thirty-five articles were identified on ethnicities and response rates to survey modes. Six articles compared survey mode and response rate for multiple ethnic populations. Response rates ranged from 22.0% to 68.8% in Whites, and in other ethnic groups ranged from 15.4% in African Americans to 70.9% in Latino Americans. Among the 29 articles that presented survey mode and response rate for a specific ethnicity, the highest response rate reported was from African Americans (92.5%) and the lowest was from Cambodian Americans (30.3%).

Conclusion: Response rate varied across studies but was similar across ethnicities. Response rate may be related to many factors, including survey mode, length of questionnaire, survey language and cultural sensitivity to content. Our review indicates that ethnic populations who participate in surveys are as likely to participate in research as Whites. In literature, data validity across ethnicity is still unknown and should be studied in the future.

Key words: Response rates; ethnic minority; systematic review; survey; mail survey; face-to-face survey

La traduction du résumé se trouve à la fin de l'article.

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Understanding and reducing health disparities as well as promoting equality for ethnic or racial population health have become important priorities among researchers and governments as populations of western countries are becoming ethnically and racially diverse. For example, to date, over 5 million (16.2%) Canadians consider themselves non-White and non-Aboriginal (i.e., visible minorities) and it is estimated that this number will steadily increase over the next decade due to immigration.¹ Therefore, researchers are either analyzing available data or are collecting ethnic or racial information to document ethnic/racial disparities and monitor population health.

Ethnicity/racial information is not commonly collected in Canada (such as in hospital discharge abstract data) as it presents challenges due to the sensitivity and ethical responsibilities when acquiring this information from individuals. To fully use the available secondary administrative data, surnames, geographic codes and country of birth indicators have been used in research as proxies to define ethnicity or race.²⁻⁴ However, these methods are limited due to misclassification of ethnicity for some individuals. Thus, many researchers are relying on primary data collection through various survey methods, such as the Canadian Community Health Survey or the National Population Health Survey that collected self-reported ethnicity.

Obtaining valid information from a representative sample is crucial for primary data collection. As there is no systematic review on this subject, we questioned whether minority ethnic populations

participate in surveys as actively as the majority ethnic population, which in developed countries is most commonly Whites. The rationale for raising this question among ethnic minority populations is related to: limited language capacity, limited interests in research, inexperience in participation in studies, as well as cultural differences and sensitivities. This paper describes a systematic literature review to document response rates across racial and ethnic populations in order to provide evidence to estimate potential response bias of ethnic study populations.

METHODS

A literature search was conducted using MEDLINE, SOCI Index with Full Text, PubMed, Sociological Abstracts and Academic OneFile online databases. Search words included: survey response rates or non-response rates and racial or ethnic populations (White, African American, Asian, and Hispanic); survey modes or survey methods (mail, telephone, face to face, e-mail); and response bias (non-response bias, response bias or social desirability). The search was

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limited to English language and articles published from January 1990 to June 2009. We also conducted a grey literature search of government reports, databases and websites using the above search terms in Canada, the United States, Australia, New Zealand and the United Kingdom.

Abstract and full-text review

Abstracts were excluded if they did not describe response rates across racial and ethnic minorities or did not report on research based in Canada, the US, Australia, New Zealand or the UK. These countries were included as they are multi-ethnic developed countries.

Subsequently, full-text articles were excluded if they did not include a study response rate per ethnic or racial group. Prior to the extraction of the data, a definition of response rate (RR) was established as follows: $RR = n/N$ where n is the number of participants who responded to the survey (analyzed data) and N is the number within the total population or sample size contacted. Among the abstracts selected from the process above, the following information was extracted from each full-text article: geographic location of the study, year of publication, survey mode, study population characteristics, sample size, survey language, and the response rate from ethnic and racial populations.

Analysis

To address the purpose of the study, descriptive statistics were used.

RESULTS

We initially identified 559 abstracts using the aforementioned search terms. Upon applying the inclusion and exclusion criteria, the number of articles was reduced to 121 (Figure 1). Next, 35 articles on ethnicities and response rates to survey modes were identified.

Six of 121 articles compared survey mode and response rate for multiple racial and ethnic populations (Table 1). The response rate in these articles ranged from 22.0% to 68.8% in Whites. Similarly, response rates in other ethnic groups ranged from 15.4% in African Americans to 70.9% in Latino Americans.

Twenty-nine of 121 articles presented survey mode and response rate for a specific ethnicity or race (Table 2). Among response rates with one ethnicity or race reported, the highest was from African Americans (92.5%) and the lowest was from Cambodian Americans (30.3%). Response rates ranged from 50.0% to 80.0% in 23 studies. Among studies using face-to-face surveys ($n=11$), response rates ranged from 30.3% to 82.0%. In studies using mail surveys ($n=7$), the response rates ranged from 31.0% to 80.0%. The response rate among telephone surveys ($n=9$) ranged from 41.0% to 85.6%.

DISCUSSION

Our systematic review found that the majority of studies on ethnicity reported overall response rate, without specifying the rate by ethnicity. Among the studies included in the review, response rate is similar across ethnicities/race, including Whites. Seventy-nine percent (23 of 29) of individual ethnic studies reported reasonable response rates, ranging from 50.0% to 80.0%.

We found that response rate was not consistently calculated and reported across studies and faced challenges to compare response rates across studies. A survey process includes multiple steps; from

Figure 1. Process of identifying articles to include in the systematic review

Abstracts Found: 559

438 Abstracts Excluded

Why:

- not published in United States, Canada, United Kingdom, New Zealand or Australia
- excluded if no key words or topics relevant to "response rates to different survey modes across racial and ethnic minorities"

Articles Selected: 121

86 Articles Excluded

Why:

- excluded if no "true" response rate per specific ethnic or racial group

Articles Selected: 35

defining potential study population, to screening and determining eligible individuals (which includes removing those who are non-eligible), inviting them to participate in the survey, collecting information from participants, and cleaning the data at analysis stage (see Figure 2). Response rate is related to selection of denominator and numerator ($RR = n/N$) as these numbers may change in the survey process as described above. Aday⁵ provides a sophisticated method of estimating response rates (i.e., estimating and removing non-eligibles from non-contacts and estimating and retaining refusals among the non-contacts) specific to the method of survey data collection.

This study found that some authors used the number of individuals who agreed to participate as their denominator (N) and other studies used the number of respondents before excluding those with unit missing values, as a result providing inaccurate response rates. Also, in some studies some authors used the potential or screened population(s) as the denominator (instead of the eligible population) which underestimated the response rate. Other studies did not remove item non-response from the analysis (numerator, n), thus creating an overestimated response rate. Therefore due to the improper and inconsistent measurements of response rates, this study found that quoted response rates were often over- and under- represented. We highly recommend that authors specify their definition of response rate through providing "n" and "N" in their papers and that editors/reviewers examine these definitions.⁶

Further, through examination of the literature, we found that response rates are directly correlated to the study design and sampling frame. For example, the response rate from a convenient sample (a type of non-probability sampling which involves the sample being drawn from that part of the population which is close to hand) is likely to be higher compared to a telephone survey. This is because in convenient sampling, individuals may be more willing or feel more pressured to participate in the survey compared to a random-digit-dialling survey (RDD). However, Quan et al.⁷ based their sampling frame on RDD from surnames listed in a telephone book and reported similar response rates between White and Chinese in Canada.

We questioned the modality effects and which would be ideal for ethnic populations. In our review, there were only two papers

Table 1. Response Rate Reported by Studies of Multiple Ethnicities

Corresponding Author	Author's Affiliation Field	Author's Affiliated Country	Geographic Location of Study / Publication Year	Survey Mode	Study Population	Sample Size (n)	Language Used in Survey	Response Rate (%)
Steffen, AD ¹⁴	Cancer Research Center of Hawaii, University of Hawaii, Honolulu, Hawaii	USA	USA 2008	Mail	A multiethnic cohort from Hawaii and California ages 45-75	201,461	Spanish / English	Overall: 25.6 White: 34.1 African American: 21.1 Native Hawaiian: 33.7 Japanese American: 45.3 Latino: 16.5
Quan, H ⁷	Faculty of Medicine, University of Calgary, Calgary, Alberta	CANADA	CANADA 2008	Telephone	White and Chinese >18 years old	1655	English / Cantonese / Mandarin	Overall: 45.0 White: 41.2 Chinese: 49.2
Gilliss, CL ¹⁵	Yale University School of Nursing, New Haven, Connecticut	USA	USA 2001	Mixed methods (face-to-face; internet website recruitment; mail)	Females ages 40-48	346	English	Overall: 47.9 African American: 46.1 European American: 51.4 Mexican/Central American: 44.3
Sax, LJ ¹⁶	Higher Education Research Institute, University of California, Los Angeles, California	USA	USA 2003	Mixed methods (paper only; paper with web option; web only with response incentive; web only without response incentive)	College students	948	English	Overall: 21.5 White: 22.0 African American: 15.4 American Indian: 16.5 Asian American: 30.8 Latina/o Other: 29.1
Davies, MJ ¹⁷	Leicester Royal Infirmary, Leicester, United Kingdom	UNITED KINGDOM	UNITED KINGDOM 1999	Mail	Asian Caucasians	2134 1991	English	Asians: 34.4 Caucasians: 54.0
Lee, MM ¹⁸	Harvard Medical School, Boston, MA	USA	USA 2000	Telephone	Alternative therapies used by women with breast cancer in four ethnic populations	Blacks: 163 Chinese: 160 Latinos: 141 Non-Hispanic Whites: 141	English, Chinese, Spanish	Blacks: 61.3 Chinese: 51.3 Latinos: 70.9 Non-Hispanic Whites: 68.8

that studied differences in survey modes across multiple racial and ethnic groups. Mailing is generally not a recommended survey mode for ethnic populations.⁸ As well, language capacity, cultural sensitivity, content and time may be factors affecting response rate. Mailed surveys followed by face-to-face interviews as a means of survey mode is recommended due to the ability to communicate directly and the available time to clarify objectives.⁹

In the literature, there is much discussion on factors that affect response rates in surveys among ethnicities.¹⁰ Researchers commonly acknowledge that it is essential to use culturally sensitive terms and material when designing surveys for ethnic groups. The type of survey mode (mail, telephone, face-to-face) and the length and content of the questionnaire are important to consider.¹¹ The survey mode chosen is important as ethnic groups may differ in the way they prefer to be contacted (telephone, mail, e-mail or face-to-face). This may also change within ethnic groups for sex and age. Choosing an appropriate interviewer for face-to-face interviews who does not inflict personal bias and is culturally sensitive may increase participation and response rates.^{12,13} For some modes, offering incentives (i.e., monetary) for study participation may be valuable for increased participation. It is also important to take into consideration the expense of each mode. Another factor affecting ethnic response rates is personal salience.¹⁰ It is expected that this is present when a significantly high response rate is found in studies specifically about respondents' ethnicity/race (e.g., studies called 'African American Health Survey' or 'South Asians in Canada Health Study') or ethnic minorities in general, compared to studies in the general population. As well, the title of the study might explain the range in response rates; which thus provides compelling evidence that the study title affects response rates among ethnic groups.¹¹ Therefore, survey modes affect the response differences at the individual level due to the mode of data collection or the way respondents interact with the questionnaire, which may change per ethnic group. Thus, by addressing these variables, the methodological implication for any choice of survey methods can be justified.

Our review also attempted to assess data validity across ethnicities or races. Unfortunately, there was no study addressing data quality by survey mode. Future studies are needed on this topic as the combination of response rate and data validity informs validity of study findings.

The limitations encountered during our review are as follows: first, we limited our search to articles published in English; thus our findings may not be generalizeable to countries where English is

Table 2. Response Rate Reported by Studies of Single Ethnic Population

First Author	Author's Affiliation Field	Author's Affiliated Country	Geographic Location of Study / Publication Year	Survey Mode	Study Population	Sample Size (n)	Language Used in Survey	Response Rate (%)
Fitzpatrick, KM ¹⁹	Professor and Jones Chair, University of Arkansas, Fayetteville, Arkansas	USA	USA, 2007	Mail	African American adolescents from a single school district	1542	English	African American 80.0
Horn, JB ²⁰	Department of General Pediatrics and Adolescent Medicine, Children's National Medical Center, Washington, DC	USA	USA, 2004	Online	African American English-speaking parents of children <48 months	175	English	African American 92.5
Waterman, AD ²¹	Internal Medicine, Washington University School of Medicine, St. Louis, Missouri	USA	USA, 2008	Telephone	African Americans regarding early detection of kidney disease	856	English	African American 42.4
Solberg, VS ²²	Department of Educational Psychology, University of Wisconsin, Milwaukee, Wisconsin	USA	USA, 1994	Mail	Graduate and undergraduate Asian American students	705	English	Asian American 53.8
Corell, EZ ²³	Department of Dermatology, Stanford University School of Medicine, Stanford, California	USA	USA, 2009	Online	Adult volunteers who self-identified as Asian Americans	546	English	Asian American 74.4
Croucher, RE ²⁴	Institute of Dentistry, Barts & The London (QMUL), Turner Street, London, UK	UNITED KINGDOM	USA, 2007	Face-to-face	UK-resident Bangladeshi males	325	English / Sylheti	Bangladeshi 59.0
Tu, SP ²⁵	Department of Medicine, University of Washington, Seattle, WA	USA	USA, 2001	Face-to-face	Cambodian American women	413	Khmer / English	Cambodian American 30.3
Lai, DW ²⁶	Faculty of Social Work, The University of Calgary, Calgary, Alberta	CANADA	CANADA, 2009	Telephone	Chinese Canadians ≥55 years old	2272	English / Chinese dialect	Chinese Canadian 77.0
Lai, DW ²⁷	Faculty of Social Work, The University of Calgary, Calgary, Alberta	CANADA	CANADA, 2009	Telephone	Chinese adults ≥65 years old	339	English / Cantonese / Mandarin / Toishanese / Other Chinese dialect	Chinese Canadian 85.6
Ramirez, AG ²⁸	University of Texas Health Science Center at San Antonio, Texas	USA	USA, 2000	Telephone	Hispanic women	2239	English / Spanish	Hispanic 47.4
Mas, FGS ²⁹	University of Texas El Paso, Texas	USA	USA, 2005	Face-to-face	US Hispanic physicians	45	English	Hispanic 55.5
Ortiz, BI ³⁰	Department of Pharmacy Practice, College of Pharmacy, Nova Southeastern University-West Palm Beach, Florida	USA	USA, 2006	Mail	Hispanic adults	142	English / Spanish	Hispanic 71.0
Trinidad, DR ³¹	Cancer Prevention and Control, Moores UCSD Cancer Center, La Jolla, California	USA	USA, 2006	Telephone	Hispanic Women	1996: 1406 1999: 1379 2002: 2912	English	Hispanic 1996: 69.8 1999: 64.2 2002: 56.1

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Table 2. Response Rate Reported by Studies of Single Ethnic Population, continued

First Author	Author's Affiliation Field	Author's Affiliated Country	Geographic Location of Study / Publication Year	Survey Mode	Study Population	Sample Size (n)	Language Used in Survey	Response Rate (%)
Ortega, AN ³²	University of California, Los Angeles, California	USA	USA, 2008	Face-to-face	Latino adults with IED	2554	English / Spanish	75.5
Chaudhry, S ³³	General Internal Medicine and Outcomes Research, University of Chicago, Chicago, Illinois	USA	USA, 2003	Mail	South Asian women	615	English	32.1
Lai, DW ³⁴	Faculty of Social Work, The University of Calgary, Calgary, Alberta	CANADA	CANADA, 2009	Telephone	South Asians ≥55 years old	220	English / Hindi / Urdu / Punjabi / Gujarati	66.9%
Taylor, VM ³⁵	Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, Washington	USA	USA, 2004	Mixed method (Mail / face-to-face)	Vietnamese American men	345	Vietnamese / English	58.1
Taylor, VM ³⁶	Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, Washington	USA	USA, 2005	Face-to-face	Vietnamese American women	370	Vietnamese	61.5
Pham, H ³⁷	School of Medicine, University of Washington, Seattle, Washington	USA	USA, 2004	Mail	Vietnamese American church attendees and students attending a major university	278	English	79.7
Chow, C ³⁸	St. Michael's Hospital, University of Toronto, Toronto, Ontario	CANADA	CANADA, 2008	Telephone	Chinese Canadians	2443	English and two major Chinese dialects	41.0
McPhee, SJ ³⁹	University of California, San Francisco, California	USA	USA, 1997	Face-to-face	Vietnamese Americans in San Francisco and Sacramento	306 339	Vietnamese	Vietnamese Americans San Francisco Sacramento
Pham, CT ⁴⁰	University of California, San Francisco, California	USA	USA, 1992	Mail	Vietnamese women	107	Vietnamese	31.0
Tang, TS ⁴¹	University of Michigan Medical School, Ann Arbor, Michigan	USA	USA, 2000	Self-administered	Chinese American women	100	Chinese and English	71.0
Wisner, BA ⁴²	School of Public Health, Berkeley, California	USA	USA, 1998	Telephone	Korean American women	1090	Korean and English	80.0
Yi, JK ⁴³	University of Houston, Houston, Texas	USA	USA, 1994	Telephone	Vietnamese American women	141	Vietnamese and English	60.5
Jenkins, CNH ⁴⁴	University of California, San Francisco, California	USA	USA, 1996	Face-to-face	Vietnamese Americans	215	Vietnamese and English	55.0
Palacios, C ⁴⁵	University of British Columbia, Vancouver, British Columbia	CANADA	CANADA, 1992	Face-to-face	Hispanic Canadians	72	Spanish	49.0
Hislop, TG ⁴⁶	Cancer Control Research, BC Cancer Agency, Vancouver, BC	CANADA	CANADA, 2007	Face-to-face	Chinese immigrants to British Columbia, Canada	504	English, Cantonese, Mandarin	59.0
Lubetkin, EI ⁴⁷	Department of Community Health and Social Medicine, CUNY Medical School, New York, NY	USA	USA, 2003	Face-to face	Low-income Chinese American primary care patients	429	English, Chinese	82.0

Figure 2. The survey process to calculate response rate

not the main language spoken. Second, we also limited our search to specific countries with diversity in minorities as well as a certain level of geographical development. Third, although this study conducted a comprehensive literature search, it is possible that we may have missed articles due to varied paper search terms or key words. Fourth, in the literature the number of categories and the specific definition(s) of race and ethnicity vary. For example, census definition(s) in the US and Canada have some key differences (e.g., Pacific Islanders in the US, Inuit and Métis in Canada). However, this study accepted the race/ethnicity definitions provided in each article included in the systematic review. As with any systematic review, this could raise inherent validity and reliability issues not seen with variables such as sex and age.

In conclusion, response rate varied across studies but is similar across ethnicities/race. The response rate may be related to many factors, including survey mode, length of questionnaire, survey language and cultural sensitivity to content. Our review indicates that ethnic populations who participate in surveys are as likely to participate in research as Whites. In literature, data validity across ethnicity is still unknown and should be studied in the future.

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RÉSUMÉ

Objectif : Procéder à un examen systématique afin d'examiner si les minorités ethniques participent aux sondages aussi activement que l'ethnie majoritaire.

Méthode : Une recherche bibliographique incluant la littérature grise a été réalisée dans cinq bases de données en ligne et dans des bases de données et rapports gouvernementaux sur les termes : taux de réponse ou taux de non-réponse, populations raciales ou ethniques (blanche, afro-américaine, asiatique et hispanique); modes et méthodes de sondage (par la poste, par téléphone, en personne, par courriel); et biais dans les réponses (biais des non-réponses, biais des réponses, désirabilité sociale). La recherche a été limitée à la langue anglaise et aux articles publiés de janvier 1990 à juin 2009. Les articles ont été triés selon des critères d'inclusion et d'exclusion.

Synthèse : Trente-cinq articles ont été trouvés sur l'appartenance ethnique et le taux de réponse aux modes de sondage. Six articles comparent les modes de sondage et le taux de réponse pour différents groupes ethniques. Le taux de réponse variait de 22,0 % à 68,8 % chez les Blancs; dans les autres groupes ethniques, il était de 15,4 % chez les Afro-Américains et de 70,9 % chez les Latino-Américains. Sur les 29 articles présentant le mode de sondage et le taux de réponse pour une ethnie, le taux de réponse le plus élevé a été observé chez les Afro-Américains (92,5 %), et le plus bas, chez les Américains d'origine cambodienne (30,3 %).

Conclusion : Les taux de réponse varient selon les études, mais ils sont similaires d'un groupe ethnique à l'autre. Le taux de réponse peut être lié à de nombreux facteurs, dont le mode d'enquête, la longueur et la langue du questionnaire, et la sensibilité culturelle du contenu. Notre examen indique que les populations d'origines ethniques différentes sont aussi susceptibles de participer à des sondages que la population blanche. Dans la littérature, la validité des données selon l'appartenance ethnique est encore inconnue et devrait être étudiée plus avant.

Mots clés : taux de réponse; minorité ethnique; examen systématique; sondage; sondage par la poste; sondage en personne

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