

## Supplemental Material

Vedire Y., Groman A., Siromoni B., Yendamuri S., Mukherjee S, Geographical Disparities in Trends of Esophageal Cancer Incidence and Mortality between 1975 and 2016

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Table S1. STROBE Statement—Checklist of items that should be included in reports of cohort studies

|                              | Item No | Recommendation   | Page No <sup>a</sup>        |
|------------------------------|---------|--|-----------------------------|
| Title and abstract           | 1       | (a) Indicate the study’s design with a commonly used term in the title or the abstract   | 2                           |
|                              |         | (b) Provide in the abstract an informative and balanced summary of what was done and what was found  | 2                           |
| Introduction                 |         |  |                             |
| Background/rationale         | 2       | Explain the scientific background and rationale for the investigation being reported   | 3                           |
| Objectives                   | 3       | State specific objectives, including any prespecified hypotheses   | 3                           |
| Methods                      |         |  |                             |
| Study design                 | 4       | Present key elements of study design early in the paper  | 4                           |
| Setting                      | 5       | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection  | 4                           |
| Participants                 | 6       | (a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up<br>(b) For matched studies, give matching criteria and number of exposed and unexposed  | 4, 5<br>N/A                 |
| Variables                    | 7       | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable   | 5                           |
| Data sources/<br>measurement | 8*      | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group   | 4, 5                        |
| Bias                         | 9       | Describe any efforts to address potential sources of bias  | 5                           |
| Study size                   | 10      | Explain how the study size was arrived at  | N/A                         |
| Quantitative variables       | 11      | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why   | 5                           |
| Statistical methods          | 12      | (a) Describe all statistical methods, including those used to control for confounding<br>(b) Describe any methods used to examine subgroups and interactions<br>(c) Explain how missing data were addressed<br>(d) If applicable, explain how loss to follow-up was addressed<br>(e) Describe any sensitivity analyses | 5<br>N/A<br>5<br>N/A<br>N/A |
| Results                      |         |  |                             |
| Participants                 | 13*     | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed<br>(b) Give reasons for non-participation at each stage  | 6, 7<br>N/A                 |

|                          |     |   |                     |
|--------------------------|-----|---|---------------------|
|                          |     | (c) Consider use of a flow diagram  | N/A                 |
| Descriptive data         | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders<br>(b) Indicate number of participants with missing data for each variable of interest<br>(c) Summarise follow-up time (eg, average and total amount)  | 6, 7<br>6, 7<br>N/A |
| Outcome data             | 15* | Report numbers of outcome events or summary measures over time  | 6, 8                |
| Main results             | 16  | (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included<br>(b) Report category boundaries when continuous variables were categorized<br>(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | 7, 8<br>N/A<br>N/A  |
| Other analyses           | 17  | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses  | N/A                 |
| <b>Discussion</b>        |     |   |                     |
| Key results              | 18  | Summarise key results with reference to study objectives  | 8                   |
| Limitations              | 19  | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias  | 10                  |
| Interpretation           | 20  | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence  | 10                  |
| Generalisability         | 21  | Discuss the generalisability (external validity) of the study results   | 10                  |
| <b>Other information</b> |     |   |                     |
| Funding                  | 22  | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based   | 11                  |

<sup>a</sup>Page numbers refer to the submitted manuscript document

STROBE, Strengthening the Reporting of Observational Studies in Epidemiology.

Table S2. Age adjusted incidence and mortality rates of esophageal cancer patients between 1975 and 2016

| Time Period | Overall                     |       |                             |       |
|-------------|-----------------------------|-------|-----------------------------|-------|
|             | Incidence Rate <sup>1</sup> |       | Mortality Rate <sup>1</sup> |       |
|             | Rural                       | Urban | Rural                       | Urban |
| 1975 - 1989 | 4.66                        | 2.39  | 3.89                        | 1.86  |
| 1990 - 2000 | 5.23                        | 2.54  | 4.39                        | 1.97  |
| 2001 - 2010 | 5.88                        | 2.97  | 4.61                        | 2.19  |
| 2011 - 2016 | 6.40                        | 3.07  | 4.99                        | 2.24  |

<sup>1</sup> Age adjusted incidence and mortality rates are per 100,000 people

Age adjusted overall incidence and mortality rates per 100,000 people in urban and rural areas are shown.

Table S3. Attributable risk percentage and population attributable risk percent between 1975 and 2016 for esophageal cancer incidence.

| YEAR | Population attributable risk percent | Attributable risk percentage (95% CI) |
|------|--------------------------------------|---------------------------------------|
| 1975 | 3.98942                              | 54.52 ( 28.10, 80.94)                 |
| 1976 | 4.77311                              | 54.19 ( 30.36, 78.01)                 |
| 1977 | 2.32555                              | 41.28 ( 6.71, 75.85)                  |
| 1978 | 2.8153                               | 40.04 ( 9.75, 70.33)                  |
| 1979 | 3.04663                              | 46.15 ( 17.51, 74.79)                 |
| 1980 | 3.11128                              | 50.53 ( 22.07, 78.99)                 |
| 1981 | 1.39428                              | 30.02 ( -10.71, 70.74)                |
| 1982 | 2.98689                              | 57.05 ( 27.54, 86.55)                 |
| 1983 | 2.58241                              | 44.13 ( 12.64, 75.61)                 |
| 1984 | 3.82566                              | 48.57 ( 23.08, 74.07)                 |
| 1985 | 2.81821                              | 44.02 ( 15.88, 72.17)                 |
| 1986 | 3.75946                              | 50.23 ( 26.27, 74.19)                 |
| 1987 | 3.17514                              | 42.02 ( 15.40, 68.64)                 |
| 1988 | 6.57157                              | 60.72 ( 42.33, 79.12)                 |
| 1989 | 3.63561                              | 50.19 ( 24.40, 75.99)                 |
| 1991 | 5.87596                              | 60.10 ( 40.44, 79.75)                 |
| 1992 | 6.51571                              | 61.90 ( 44.16, 79.64)                 |
| 1993 | 3.97054                              | 50.16 ( 27.65, 72.68)                 |
| 1994 | 2.73489                              | 37.50 ( 11.39, 63.60)                 |
| 1995 | 5.74299                              | 54.89 ( 35.60, 74.18)                 |
| 1996 | 4.42236                              | 47.63 ( 26.97, 68.28)                 |
| 1997 | 4.90159                              | 49.65 ( 29.72, 69.59)                 |
| 1998 | 3.91093                              | 46.05 ( 24.55, 67.55)                 |
| 1999 | 3.37158                              | 45.41 ( 23.45, 67.36)                 |
| 2000 | 6.2944                               | 54.74 ( 38.67, 70.82)                 |
| 2001 | 4.95406                              | 50.14 ( 32.20, 68.09)                 |
| 2002 | 4.39056                              | 47.61 ( 29.00, 66.22)                 |
| 2003 | 5.22068                              | 48.55 ( 31.59, 65.51)                 |
| 2004 | 4.6825                               | 47.89 ( 31.13, 64.65)                 |
| 2005 | 5.21185                              | 52.27 ( 35.21, 69.32)                 |
| 2006 | 4.26464                              | 46.91 ( 28.75, 65.07)                 |

|      |         |                       |
|------|---------|-----------------------|
| 2007 | 3.56445 | 39.41 ( 20.29, 58.53) |
| 2008 | 5.81229 | 49.49 ( 34.44, 64.55) |
| 2009 | 6.41988 | 55.43 ( 41.00, 69.86) |
| 2010 | 6.06377 | 53.24 ( 38.32, 68.17) |
| 2011 | 5.97584 | 54.31 ( 39.59, 69.03) |
| 2012 | 6.9834  | 54.92 ( 41.04, 68.80) |
| 2013 | 6.24818 | 54.75 ( 40.81, 68.69) |
| 2014 | 6.1338  | 51.16 ( 36.33, 65.98) |
| 2015 | 3.96502 | 44.20 ( 27.15, 61.25) |

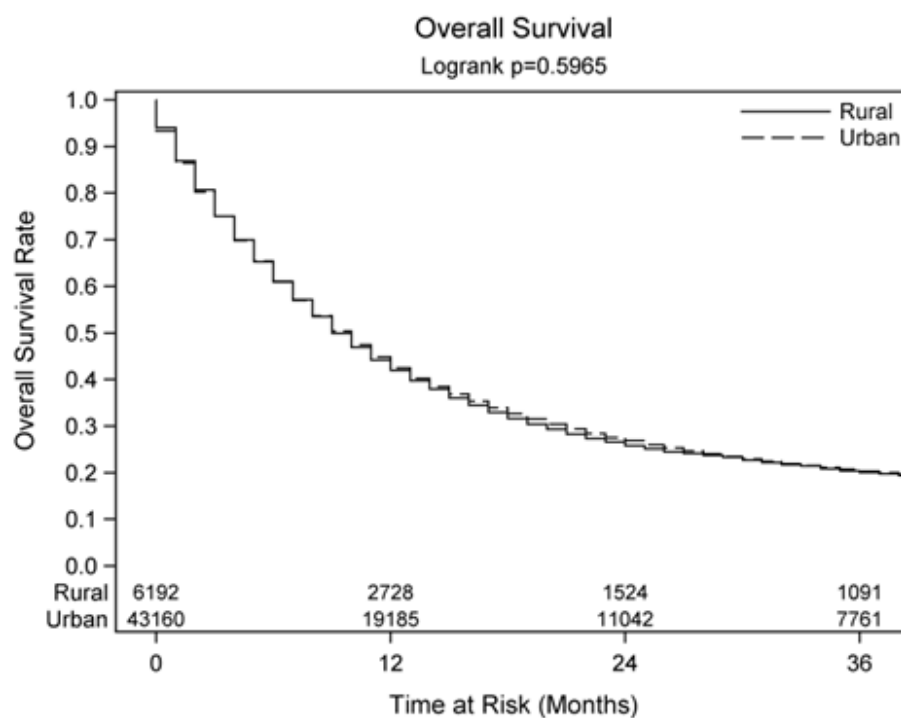


Figure S1. Kaplan Meier Survival Plot for Overall Survival between urban and rural oesophageal cancer patients.

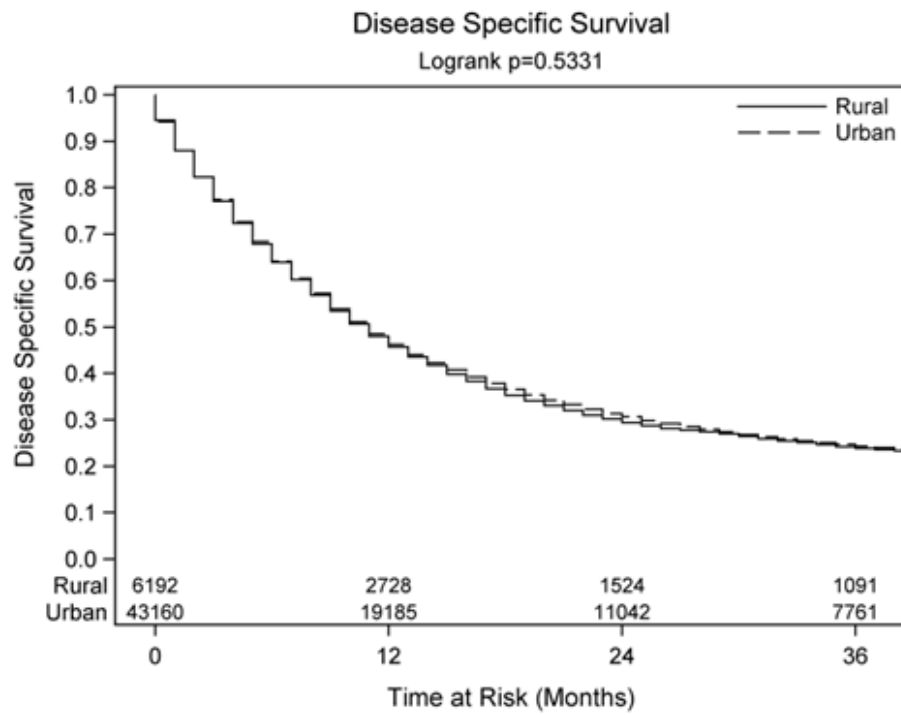


Figure S2. Kaplan Meier Survival Plot for Disease Specific Survival between urban and rural oesophageal cancer patients