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Mapping Evidence of Food Safety at Transport stations in Africa: A Scoping Review Protocol

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1 Mapping Evidence of Food Safety at Transport stations in Africa: A 2 Scoping Review Protocol

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3 **29 Abstract**
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5 **30 Background:** In Africa, food trading in public spaces such as transport stations, taxi ranks, and
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7 **31** on the streets is fast-growing, particularly in the urban and peri-urban areas. Although food
8
9 **32** trading in such public spaces serves as a source of livelihood for many people, unsafe food can
10
11 **33** have a significant impact on health. We, therefore, aim to systematically map literature on food
12
13 **34** safety at transport stations in Africa and examine the literature to identify research gaps for
14
15 **35** future studies.

16 **36 Methods:** We will employ the Arksey & O'Malley framework, Levac et al. recommendations,
17
18 **37** and the Joanna Briggs Institute guidelines to guide this study. We will conduct a comprehensive
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20 **38** search in: PubMed, SCOPUS, Web of Science, and Google Scholar for relevant articles using
21
22 **39** a combination of keywords/search terms with no limitations. We will also search for relevant
23
24 **40** literature from the World Health Organization and the Food and Agriculture Organization
25
26 **41** websites, and from the reference list of all included articles. Two investigators will
27
28 **42** independently screen the articles in parallel at the abstract and full-text phases using the
29
30 **43** eligibility criteria as a guide. Data extraction will be done using a piloted data extraction form
31
32 **44** designed in a Microsoft® Word tabular format. Afterward, the extracted data will be collated
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34 **45** into themes and sub-themes, summarized, and the results reported utilizing a narrative
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36 **46** approach. The Preferred Reporting Items for Systematic Reviews and Meta-analysis:
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38 **47** Extension checklist designed for scoping review will be followed to report the findings of this
39
40 **48** study.

41 **49 Ethics and dissemination:** Not required. All sources of data will be adequately cited and added
42
43 **50** to the reference list. We will present the final scoping review results at the appropriate
44
45 **51** workshops, meetings, conferences, as well as submit for peer review and publication in a
46
47 **52** scientific journal.

48 **53 Keywords:** Food safety, Food security, Transport stations, Taxi ranks, Car parks, Bus stops,
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50 **54** Automobile stations, Africa

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3 58 **Article summary**
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6 59 **Strengths and limitations of this study**
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- 9 60 • This will be the first scoping review to systematically map literature, examine the scope
10 and identify research gaps on the safety food at transport stations in Africa
11 61
12
13 62 • A comprehensive search for potentially eligible articles will be conducted in four
14 electronic databases, and websites of international organizations.
15 63
16
17 64 • The scoping review permits the inclusion of all types of study designs, and it
18 encompasses both published and grey literature.
19 65
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21 66 • Boolean words AND/OR as well as medical subject heading (MeSH) terms will be
22 included in the electronic search strategy to capture all relevant studies.
23 67
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25 68 • This study limitation is the use of only four databases, which may potentially result in
26 missing relevant articles indexed in other electronic databases.
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86 **Background**

87 Food is one of the major modes of disease transmission from microbial, chemical, and physical
88 hazards. Unsafe food containing harmful bacteria, viruses, parasites or chemical substances
89 can cause more than 200 different diseases – ranging from diarrhea to cancers [1]. Although
90 unsafe food can have a significant impact on health in both high-income and low-and middle-
91 income countries (LMICs), the impact is much higher in LMICs [2, 3]. Globally, it is estimated
92 that unsafe food results in about 600 million cases of foodborne diseases and close to 420 000
93 deaths with about 30% of all foodborne deaths occurring among children less than 5 years
94 annually [1, 2]. The WHO further estimates that eating unsafe food results in approximately 33
95 million years of healthy lives lost (DALYs) worldwide every year [1]. As a result, in 2006, the
96 World Health Organization (WHO) declared foodborne diseases as well as food-related
97 diseases and food safety as a major public health concern [4, 5]. Unsafe food creates a vicious
98 cycle of disease and malnutrition, particularly affecting infants, young children, the elderly and
99 the sick. To this end, access to safe, and nutritious and sufficient food is key to sustaining life
100 and promoting good health.

101 Food safety according to the WHO denotes restraining the presence of hazards whether chronic
102 or acute, that may make food harmful to the health of the consumer [6]. Food safety is about
103 producing, handling, storing and preparing food in such a way as to prevent infection and
104 contamination in the food production chain, and to help ensure that food quality and
105 wholesomeness are maintained to promote good health [6]. In addition to contributing to food
106 and nutrition security, a safe food supply also supports national economies, trade, and tourism,
107 stimulating sustainable development [6, 7]. The globalization of food trade, a growing world
108 population, climate change and rapidly changing food systems have an impact on the safety of
109 food [6, 7].

110 In most LMICs, food trading in public spaces such as transport stations, taxi ranks, and on the
111 streets is fast-growing, particularly in the urban and peri-urban areas. It is evident that over 2.4
112 billion people eat food sold by vendors in those public spaces every day worldwide [8, 9] due
113 to several reasons such as the thinking that the foods sold in public spaces are appealing, ready-
114 to-eat, convenience, and of low cost and savory taste [10-12]. Food trading in public spaces
115 serves as a source of livelihood for many households in LMICs [7, 10, 12]. Although the food
116 sold in public spaces may also have great nutritional value depending on the type of ingredients
117 and the conditions under which the food was prepared and served to the customer, there are
118 health implications. This is mostly because the food is prepared and sold in an environment

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3 119 that often lacks sanitary facilities and surveillance, and at times, has no legal control in most
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5 120 LMICs [12-14]. Despite this, no study to the best of our knowledge has map literature on food
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7 121 safety in public spaces in Africa. We, therefore, intend to conduct a systematic search for
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9 122 literature to examine the scope of evidence and identify research gaps on food safety in public
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11 123 spaces with a focus on transport stations in Africa. We expect to retrieve many studies and
12
13 124 describe their findings to inform policy. We also anticipate identifying gaps for future research
14
15 125 to improve food safety in public spaces such as taxi ranks, transport stations, and the streets of
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17 126 Africa.

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128 **Methods**

129 **Design of the study protocol**

130 We will employ an amended Arksey & O'Malley framework incorporating the Levac et. al.
131 recommendation [15, 16] to guide this scoping review. The Arksey & O'Malley framework
132 includes the following: research question identification; identifying relevant studies; selection
133 of study; data charting, collating, summarising and reporting the findings, and consultation.
134 However, we will exclude the consultation stage because this review is nested in a larger study
135 that already includes stakeholder consultation.

136

137 **Identifying the research question**

138 This scoping review question shall be:

139 What is the scope of evidence on food safety and public spaces in Africa? Table 1 presents the
140 Population, Concept, and Context (PCC) mnemonic used to inform the eligibility of this
141 proposed review [17].

142

143 **Identify relevant studies**

144 We will conduct a comprehensive search in: PubMed, SCOPUS, Web of Science, and Google
145 Scholar for relevant articles using a combination of the following keywords: ("transport
146 stations", "taxi ranks", "automobile stations" and "streets" "public space", "food safety", "food
147 handling", "food storage", "food preparation", "vending" "selling", "food trading", "hawking",
148 "health", "safety", and "Africa"). We will also search by using individual countries' names in
149 Africa in order to enable us to retrieve all appropriate articles. Additional search
150 terms/keywords may be identified and incorporated into the search strategy in consultation with
151 a Librarian. We will include booleans terms AND/OR and medical subject heading (MeSH)

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3 152 terms in our search. Date, study design, and language limitations will be removed during the
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5 153 databases search. The websites of International Organisations such as the WHO, and the Food
6
7 154 and Agriculture Organisation will also be searched for relevant articles. We will further search
8
9 155 for relevant grey literature such as unpublished manuscripts, thesis, and dissertations using
10
11 156 Google. Moreover, we will search the reference list of all included studies for articles
12
13 157 presenting useful information to address this propose scoping review question. The search date,
14
15 158 database, keywords, number of retrieved articles, number of eligible articles, and all other
16
17 159 relevant search records will be documented appropriately in detail. Table 2 illustrates a pilot
18
19 160 search in PubMed database for this proposed scoping review study.

161 **Eligibility criteria and study selection**

162 The eligibility criteria will be as outlined below.

163 ***Inclusion criteria:***

164 This shall include the following:

- 165 ▪ Articles reporting evidence from Africa,
- 166 ▪ Articles presenting evidence on this study's population,
- 167 ▪ Articles presenting evidence on food safety or security,
- 168 ▪ Articles reporting evidence on health-related issues (Example, foodborne diseases)
- 169 ▪ Primary studies

171 ***Exclusion criteria***

172 We shall exclude the following:

- 173 ▪ Articles presenting evidence from other countries outside Africa,
- 174 ▪ Articles presenting evidence on food trading in homes, restaurants, markets, hotels, and
175 others not included in this study population,
- 176 ▪ Articles presenting evidence on agriculture and climate change,
- 177 ▪ Articles presenting evidence on non-health topics
- 178 ▪ Review studies

180 ***Study selection***

181 The screening for potentially eligible studies will be done in three phases. In phase one, a
182 comprehensive articles search in the electronic databases will be conducted by one investigator
183 and import all eligibility studies to a new endnotes X9 library created for the review. To clean

1
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3 184 the library, all duplicates will be deleted and subsequently shared with the co-investigators. In
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5 185 phase two, two investigators will independently screen the abstracts in parallel guided by the
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7 186 eligibility criteria designed using a google form. All disagreements between the investigators
8
9 187 in terms of their response at this stage will be addressed through discussions among the
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11 188 investigators until a consensus is reached. Similarly, in the third phase, two investigators will
12
13 189 independently screen all the full-text articles as described in phase two, however, a third
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15 190 investigator will be engaged to resolve any discrepancies in their responses. We shall
16
17 191 collaborate with the systematic review unit of the University of KwaZulu-Natal to articles
18
19 192 published in other languages either English. All articles retrieved from the reference list of
20
21 193 included studies will also be screened using the same process. Where a full-text article cannot
22
23 194 be retrieved or not accessible from the online databases, we will seek assistance from the
24
25 195 University of KwaZulu-Natal library or write to the authors to request the full-text for
26
27 196 screening. An amended PRISMA (Preferred Reporting Items for Systematic Review and Meta-
28
29 197 Analyses) flow diagram will be used to report the search and screening results [18] (Figure 1).

198 **Charting the data**

199 We will design a data extraction form using Microsoft ® Word in a tabular format. To ensure
200
201 the trustworthiness and reliability of the data, two independent investigators will pilot the data
202
203 extraction form using a random sample of ten percent of the included articles in parallel.
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205 Subsequently, the data extraction form will be revised if necessary to ensure its rigor and ability
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207 to capture all relevant data to answer the review question. We will keep the data extraction
208
209 form updated throughout this process until all relevant information has been extracted from the
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211 included articles. Table 3 shows the data extraction form that will be used for this scoping
212
213 review study.

214 **Collating, summarizing, and reporting the results**

215 We will present information about the included articles that are aligned with the research
question of this proposed scoping review study. All relevant data from the eligible studies will
be extracted manually using the piloted data-extraction form to answer the review question.
Following this process, the extracted data will be collated into themes and sub-themes,
summarise, and the results presented using a narrative approach. The PRISMA extension
designed for the scoping reviews checklist will be utilized to guide the reporting of the results
of this scoping review. Afterward, a meta-analysis may be conducted using quantitative data if
possible.

216 **Conclusion**

217 This manuscript presents the protocol of a scoping review study. We anticipate the scoping
218 review results will provide useful evidence-based information to inform for food safety policy
219 decisions and implementation on food trading in transport stations, taxi ranks, and the streets
220 in Africa. This scoping review will also permit us to examine the available evidence and
221 identify gaps in the literature and make recommendations for future research such as systematic
222 reviews, meta-analysis, and primary studies in Africa.

224 **Ethics and dissemination**

225 Not required. All sources of data will be adequately referenced.

227 **Statements**

228 **Acknowledgments**

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230 used in the development of this protocol.

232 **Authors' contributions**

233 BPN, SED, and DK conceptualized the study. DK wrote the manuscript. BPN and SED
234 contributed to the writing. All authors critically reviewed and approved the final manuscript.

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240 **Competing interests**

241 None declared

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24 287 Diagram. 2009;6(2009):1000097.
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30 289 **Tables**

31
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33 290 **Table 1:** PCC framework for defining the eligibility of the studies for the primary research
34 291 question
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P- Population	Transport stations: This will include bus stations, lorry parks, taxi ranks, and automobile stations, and Bus stops.
C-Concept	Food safety: This will be defined in terms of food handling, storing and preparing food, and food vending or hawking in such a way as to prevent infection and contamination in the food production chain, and to help ensure that food quality and wholesomeness are maintained to promote good health.
C-Context	African

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294 **Table 2:** Pilot search in PubMed electronic database

Date	Database	Keywords	Search results
28/10/2019	PubMed	("food safety"[MeSH Terms] OR ("food"[All Fields] AND "safety"[All Fields]) OR "food safety"[All Fields]) OR ("food supply"[MeSH Terms] OR ("food"[All Fields] AND "supply"[All Fields]) OR "food supply"[All Fields] OR ("food"[All Fields] AND "security"[All Fields]) OR "food security"[All Fields]) AND (("food"[MeSH Terms] OR "food"[All Fields]) AND vending[All Fields]) OR (("food"[MeSH Terms] OR "food"[All Fields]) AND trading[All Fields]) AND (("motor vehicles"[MeSH Terms] OR ("motor"[All Fields] AND "vehicles"[All Fields]) OR "motor vehicles"[All Fields] OR "lorry"[All Fields]) AND parks[All Fields]) OR (("motor vehicles"[MeSH Terms] OR ("motor"[All Fields] AND "vehicles"[All Fields]) OR "motor vehicles"[All Fields] OR "lorry"[All Fields]) AND station[All Fields]) OR (taxi[All Fields] AND ranks[All Fields])	261

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302 **Table 3:** Data Extraction Form

Author and publication year
Study Title
Study aim/objective
Type of study design
Study setting (Country)
Place of food trading
Study participants
Significant findings
Food safety/security outcomes
Conclusions/recommendations

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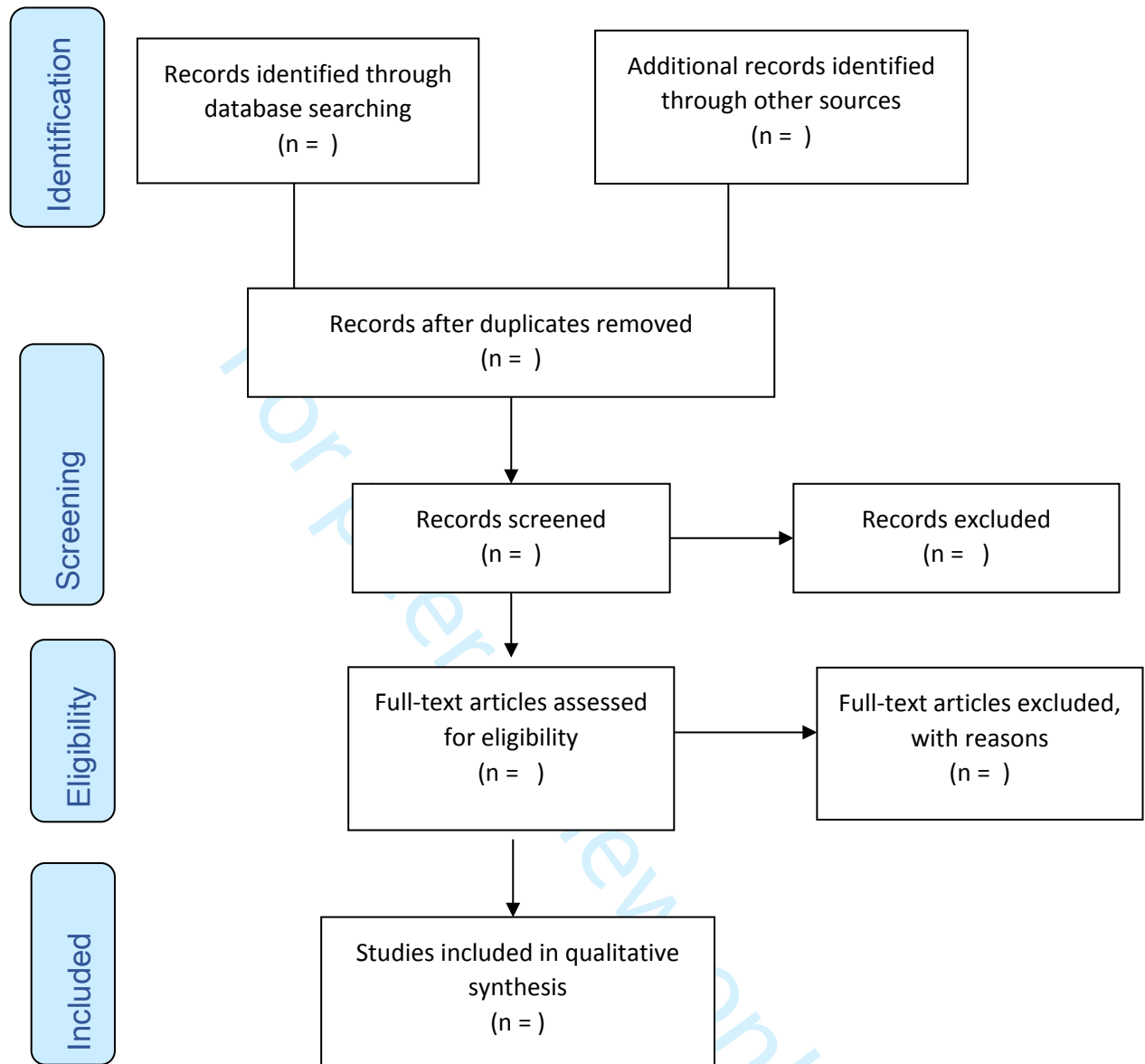
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313 **Figure**



335 **Figure 1:** PRISMA 2009 Flow Diagram [18]

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Secondary Subject Heading:	Health policy, Public health, Evidence based practice
Keywords:	Public health < INFECTIOUS DISEASES, PREVENTIVE MEDICINE, PUBLIC HEALTH, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Health & safety < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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1 Mapping Evidence of Food Safety at Transport stations in Africa: A 2 Scoping Review Protocol

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3 **31 Abstract**
4

5 **32 Introduction:** In Africa, travels, urbanization, and changing consumer habits, are increasing
6 the number of people buying and eating food prepared/sold at public spaces including transport
7 stations, particularly in the urban and peri-urban areas. Although food trading in such public
8 spaces serves as a source of livelihood for many people, unsafe food can have a negative impact
9 on health. We, therefore, aim to systematically explore and examine the literature, and describe
10 the evidence on food safety (food handling, storage, preparation and sale, packaging of food
11 when sold, hygiene of sale venue, and quality (nutrition) of food sold/purchased/eaten) at
12 transport stations to inform policy, as well as identify research gaps for future studies in Africa.
13

14 **33 Methods and Analysis:** We will employ the Arksey & O'Malley framework, Levac et al.
15 recommendations, and the Joanna Briggs Institute guidelines to guide this study. We will
16 conduct a comprehensive search in PubMed, SCOPUS, Web of Science, Google Scholar, and
17 EBSCOhost (Academic search complete, CINAHL with Full-text, and Health Source) from
18 inception to December 2019 for relevant peer-review articles using a combination of
19 keywords/search terms with no limitations. We will also search for relevant literature from the
20 reference list of all included articles. Two investigators will independently screen the articles
21 in parallel at the abstract and full-text phases using the eligibility criteria as a guide. Data
22 extraction will be done using a piloted data extraction form designed in a Microsoft® Word
23 tabular format. Afterward, the extracted data will be collated into themes and sub-themes,
24 summarized, and the results reported utilizing a narrative approach. We will the Preferred
25 Reporting Items for Systematic Reviews and Meta-analyses: Extension for scoping reviews
26 checklist to report this study results.
27

28 **34 Ethics and Dissemination:** Ethics approval not required. All sources of data will be adequately
29 cited and added to the reference list. We will present the final scoping review results at the
30 appropriate workshops, meetings, conferences, as well as submit for peer review and
31 publication in a scientific journal.
32

33 **35 Keywords:** Food safety, Transport stations, Taxi ranks, Car parks, Bus stops, Automobile
34 stations, Africa
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3 61 **Article summary**
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6 62 **Strengths and limitations of this study**
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- 9 63 • This will be the first scoping review to systematically explore literature and describe
10
11 64 the evidence on food safety at transport stations to inform policy, as well as identify
12
13 65 research gaps for future studies in Africa
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15 66 • A comprehensive search for potentially eligible articles will be conducted in four
16
17 67 electronic databases, and websites of international organizations.
18
19 68 • The scoping review permits the inclusion of all types of study designs, and it
20
21 69 encompasses both published and grey literature.
22
23 70 • Boolean words AND/OR as well as medical subject heading (MeSH) terms will be
24
25 71 included in the electronic search strategy to capture all relevant studies.
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27 72 • This study limitation is the use of only four databases, which may potentially result in
28
29 73 missing relevant articles indexed in other electronic databases.
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89 **Background**

90 Food is one of the major modes of disease transmission for microbial, chemical, and physical
91 hazards. Food containing harmful bacteria, viruses, parasites or chemical substances can cause
92 more than 200 different diseases – ranging from diarrhea to cancers [1]. Although unsafe food
93 can have a significant impact on health in both high-income and low-and middle-income
94 countries (LMICs), the impact is much higher in LMICs [2, 3]. Globally, it is estimated that
95 unsafe food results in about 600 million cases of foodborne diseases and close to 420 000
96 deaths with about 30% of all foodborne deaths occurring among children less than 5 years
97 annually [1, 2]. The WHO further estimates that eating unsafe food results in approximately 33
98 million years of healthy lives lost (DALYs) worldwide every year [1]. As a result, in 2006, the
99 World Health Organization (WHO) declared foodborne diseases as well as food-related
100 diseases and food safety as a major public health concern [4, 5]. Unsafe food creates a vicious
101 cycle of disease and malnutrition, particularly affecting infants, young children, the elderly and
102 the sick [6]. To this end, access to safe, and nutritious and sufficient food is key to sustaining
103 life and promoting good health.

104 Food safety may denote the prevention of biological or non-biological hazards in food , whether
105 chronic or acute, that may make food harmful to the health of the consumer [7]. Food safety is
106 about producing, handling, storing and preparing food in such a way as to prevent infection
107 and contamination in the food production chain, and to help ensure that food quality and
108 wholesomeness are maintained to promote good health [7]. In addition to contributing to food
109 and nutrition security, a safe food supply also supports national economies, trade, and tourism,
110 stimulating sustainable development [7, 8]. The globalization of food trade, a growing world
111 population, climate change and rapidly changing food systems have an impact on the safety of
112 food [7, 8].

113 In most LMICs, food trading at transport stations such as taxi ranks, bus stations, and lorry
114 parks is fast-growing, particularly in the urban and peri-urban areas. It is evident that over 2.4
115 billion people eat food sold by vendors at public spaces including transport stations every day
116 worldwide [9, 10]. This may be due to several reasons such as the thinking that the foods sold
117 in public spaces are appealing, ready-to-eat, convenience, and of low cost and savory taste [11-
118 13]. Food trading in public spaces serves as a source of livelihood for many households in
119 LMICs [8, 11, 13]. Although the food sold at transport stations may also have great nutritional
120 value depending on the type of ingredients and the conditions under which the food was
121 prepared and served to the customer, it may as well cause ill-health arising from contamination

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3 122 of the food. Since the food is most often prepared and sold in an environment that often lacks
4 123 sanitary facilities and health surveillance, and at times, not regulated by the appropriate local
5 124 authorities in most LMICs [13-15]. Despite this, no study to the best of our knowledge has
6 125 mapped literature on food safety at transport stations in Africa. We, therefore, intend to
7 126 systematically search for literature, examine the scope of the literature and describe the
8 127 evidence on food safety at transport stations in Africa in order to inform policy. We also
9 128 anticipate identifying gaps from the study findings for future research to improve food safety
10 129 at transport stations such as taxi ranks, bus stations, and lorry parks in Africa.
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131 **Methods**

132 **Design of the study protocol**

133 We will employ an amended Arksey & O'Malley framework incorporating the Levac et. al.
134 recommendation [16, 17] to guide this scoping review. The Arksey & O'Malley framework
135 includes the following: research question identification; identifying relevant studies; selection
136 of study; data charting, collating, summarising and reporting the findings, and consultation.
137 However, we will exclude the consultation stage because this review is nested in a larger study
138 that already includes stakeholder consultation. We followed the preferred reporting items for
139 systematic and meta-analysis extension for protocols (PRISMA-P) guidelines to developed this
140 protocol (Supplementary file 1). However, we will the Preferred Reporting Items for
141 Systematic Reviews and Meta-analyses: Extension for scoping reviews checklist to report this
142 study results.

143 **Identifying the research question**

144 This scoping review question shall be:

145 What is the scope of evidence on food safety at transport stations in Africa? Table 1 presents
146 the Population, Concept, and Context (PCC) mnemonic used to inform the eligibility of this
147 proposed review [18].
148

149 **Identify relevant studies**

150 We will conduct a comprehensive search in: PubMed, SCOPUS, Google scholar, Web of
151 Science, and EBSCOhost (Academic search complete, CINAHL with Full-text, and Health
152 Source) from inception to December 2019 for relevant articles. We will develop the search
153 strategy in consultation with a subject Librarian at the University of KwaZulu-Natal so as to
154 enable us capture all/most relevant articles for the study. We will use a combination of the

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3 155 following keywords: “transport station” OR “taxi rank” OR “automobile station” OR “bus
4 156 station” OR “lorry park” OR “car park” OR “transport hub” OR “streets” OR “public space”
5 157 AND "food safety" OR "food handling" OR "food storage" OR “food preparation” OR “food
6 158 packaging” OR “food sale” OR “food vend” OR “food sale” OR “food sold” OR “food
7 159 hawking” OR “food purchase” in order to enable us capture all appropriate peer-review articles.
8 160 We will include booleans terms AND/OR and medical subject heading (MeSH) terms in our
9 161 search. Date, study design, and language limitations will be removed during the databases
10 162 search. We will also search the reference list of all included studies for articles presenting useful
11 163 information to address this proposed scoping review question. The search date, database,
12 164 keywords, number of retrieved articles, number of eligible articles, and all other relevant search
13 165 records will be documented appropriately in detail. Table 2 illustrates a full search strategy in
14 166 PubMed database for this proposed scoping review study.

167 **Eligibility criteria and study selection**

168 The eligibility criteria will be as outlined below.

169 ***Inclusion criteria:***

170 This shall include the following:

- 171 ▪ Studies reporting evidence from Africa,
- 172 ▪ Studies presenting evidence on food safety,
- 173 ▪ Studies reporting from transport stations,
- 174 ▪ Studies published in English, and
- 175 ▪ Primary studies focusing on food safety at transportations

177 ***Exclusion criteria***

178 We shall exclude the following:

- 179 ▪ Studies presenting evidence from other countries outside Africa,
- 180 ▪ Studies presenting evidence of food safety from other sites such as homes, restaurants,
181 markets, and hotels, and schools,
- 182 ▪ Studies published in other languages such as French, Arabic, and Portuguese , and
- 183 ▪ Review studies

185 ***Study selection***

186 The screening for potentially eligible studies will be done in three phases. In phase one, a

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3 187 comprehensive articles search in the electronic databases will be conducted by one investigator
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5 188 and import all eligible articles to a new endnotes X9 library created for the review. To clean
6
7 189 the library, all duplicates will be deleted and subsequently shared with the co-investigators. In
8
9 190 phase two, two investigators will independently screen the abstracts in parallel guided by the
10
11 191 eligibility criteria designed using a google form. All disagreements between the investigators
12
13 192 in terms of their response at this stage will be addressed through discussions among the
14
15 193 investigators until a consensus is reached. Similarly, in the third phase, two investigators will
16
17 194 independently screen all the full-text articles as described in phase two, however, a third
18
19 195 investigator will be engaged to resolve any discrepancies in their responses. Cohen's kappa
20
21 196 statistic will be calculated following full text screening to demonstrate the level of agreement
22
23 197 between reviewers. All articles retrieved from the reference list of included studies will also be
24
25 198 screened using the same process. Where a full-text article cannot be retrieved or not accessible
26
27 199 from the online databases, we will seek assistance from the University of KwaZulu-Natal
28
29 200 library or write to the authors to request the full-text for screening. An amended PRISMA
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31 201 (Preferred Reporting Items for Systematic Review and Meta-Analyses) flow diagram will be
32
33 202 used to report the search and screening results [19] (Figure 1).

32 203 **Charting the data**

34 204 We will design a data extraction form using Microsoft® Word in a tabular format. To ensure
35
36 205 the trustworthiness and reliability of the data, two independent investigators will pilot the data
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38 206 extraction form using a random sample of ten percent of the included articles in parallel.
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40 207 Subsequently, the data extraction form will be revised if necessary to ensure its rigor and ability
41
42 208 to capture all relevant data to answer the review question. We will keep the data extraction
43
44 209 form updated throughout this process until all relevant information has been extracted from the
45
46 210 included articles. Table 3 shows the data extraction form that will be used for this scoping
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48 211 review study.

49 213 **Collating, summarizing, and reporting the results**

51 214 We will present information about the included articles that are aligned with the research
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53 215 question of this proposed scoping review study. All relevant data from the eligible studies will
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55 216 be extracted using the piloted data-extraction form to answer the review question. Both
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57 217 deductive (for characteristic of the included articles) and inductive (for study
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59 218 findings/outcomes) approaches will be used to extract relevant data. Thematic analysis will be
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3 219 utilised to collated the study findings into themes and sub-themes. Then, a narrative summary
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5 220 of the themes and sub-themes will be reported. To ensure rigor, the analysis will be conducted
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7 221 by two investigators with input from collaborators. The PRISMA extension designed for the
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9 222 scoping reviews checklist will be utilized to guide the reporting of the results of this scoping
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11 223 review. Afterward, a meta-analysis may be conducted using quantitative data if possible.

12 224

13 225 **Conclusion**

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16 226 This manuscript presents the protocol of a scoping review study. This scoping review will
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18 227 permit us to systematically search for literature, examine the scope of the literature and describe
19
20 228 the available evidence on food safety at transport stations in Africa. We anticipate the scoping
21
22 229 review results will provide useful evidence-based information to inform food safety policy
23
24 230 decisions and implementation at transport stations in Africa. This study will also permit us to
25
26 231 identify gaps in the literature and make recommendations for future research on food safety at
27
28 232 transport stations in Africa for further inform policy.

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30 234 **Ethics and dissemination**

31 235 Not required. All sources of data will be adequately referenced. We will present the final
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33 236 scoping review results at the appropriate workshops, meetings, conferences, as well as submit
34
35 237 for peer review and publication in a scientific journal.

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37 239 **Patient and Public Involvement**

38 240 No patient involved

39 241

40 242 **Statements**

41 243 **Acknowledgments**

42
43 244 Support for this work was provided by the Sustainable and Healthy Food Systems (SHEFS)
44
45 245 Programme, supported through the Wellcome Trust's Our Planet, Our Health Programme

46 246

47 247 **Authors' contributions**

48
49 248 BPN, DK, SED, SM, and RS conceptualized the study. DK wrote the manuscript and PG
50
51 249 contributed to the writing. BPN, SED, GM, and RS critically review the manuscript and made
52
53 250 revisions. DK wrote the final draft manuscript and all the authors approved it.

54 251

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256 of the manuscript.

258 **Competing interests**

259 None declared

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56 308 *Diagram*. 2009;6(2009):1000097.
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8 312 **Tables**9
10 313 **Table 1:** PCC framework for defining the eligibility of the studies for the primary research
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12 314 question

P- Population	Transport stations: This will include bus stations, lorry parks, taxi ranks, and automobile stations, and bus stops.
C-Concept	Food safety: This include food handling, storage, preparation and sale, packaging of food when sold, hygiene of sale venue, and quality (nutrition) of food sold/purchased/eaten.
C-Context	African

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327 **Table 2:** A full search strategy in PubMed illustrating the feasibility of the proposed scoping
 328 review

Date	Database	Keywords	Search results
06/04/2020	PubMed	(("transport"[All Fields]) AND station[All Fields]) OR (taxi[All Fields] AND rank[All Fields]) OR (("automobiles"[MeSH Terms] OR "automobiles"[All Fields] OR "automobile"[All Fields]) AND station[All Fields]) OR "bus station"[All Fields] OR ("motor vehicles"[MeSH Terms] OR ("motor"[All Fields] AND "vehicles"[All Fields]) OR "motor vehicles"[All Fields] OR "lorry"[All Fields]) AND park[All Fields]) OR "car park"[All Fields] OR "transport hub"[All Fields] OR "streets"[All Fields] OR "public space"[All Fields] AND "food safety"[All Fields] OR "food handling"[All Fields] OR "food storage"[All Fields] OR "food preparation"[All Fields] OR "food packaging"[All Fields] OR "food sale"[All Fields] OR ("food"[MeSH Terms] OR "food"[All Fields]) AND vend[All Fields]) OR "food sale"[All Fields] OR "food sold"[All Fields] OR ("food"[MeSH Terms] OR "food"[All Fields]) AND ("hawks"[MeSH Terms] OR "hawks"[All Fields] OR "hawking"[All Fields])) OR "food purchase"[All Fields] AND (("0000/01/01"[PDAT] : "2019/12/31"[PDAT]) AND "humans"[MeSH Terms])	13644

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332 **Table 3:** Data Extraction Form

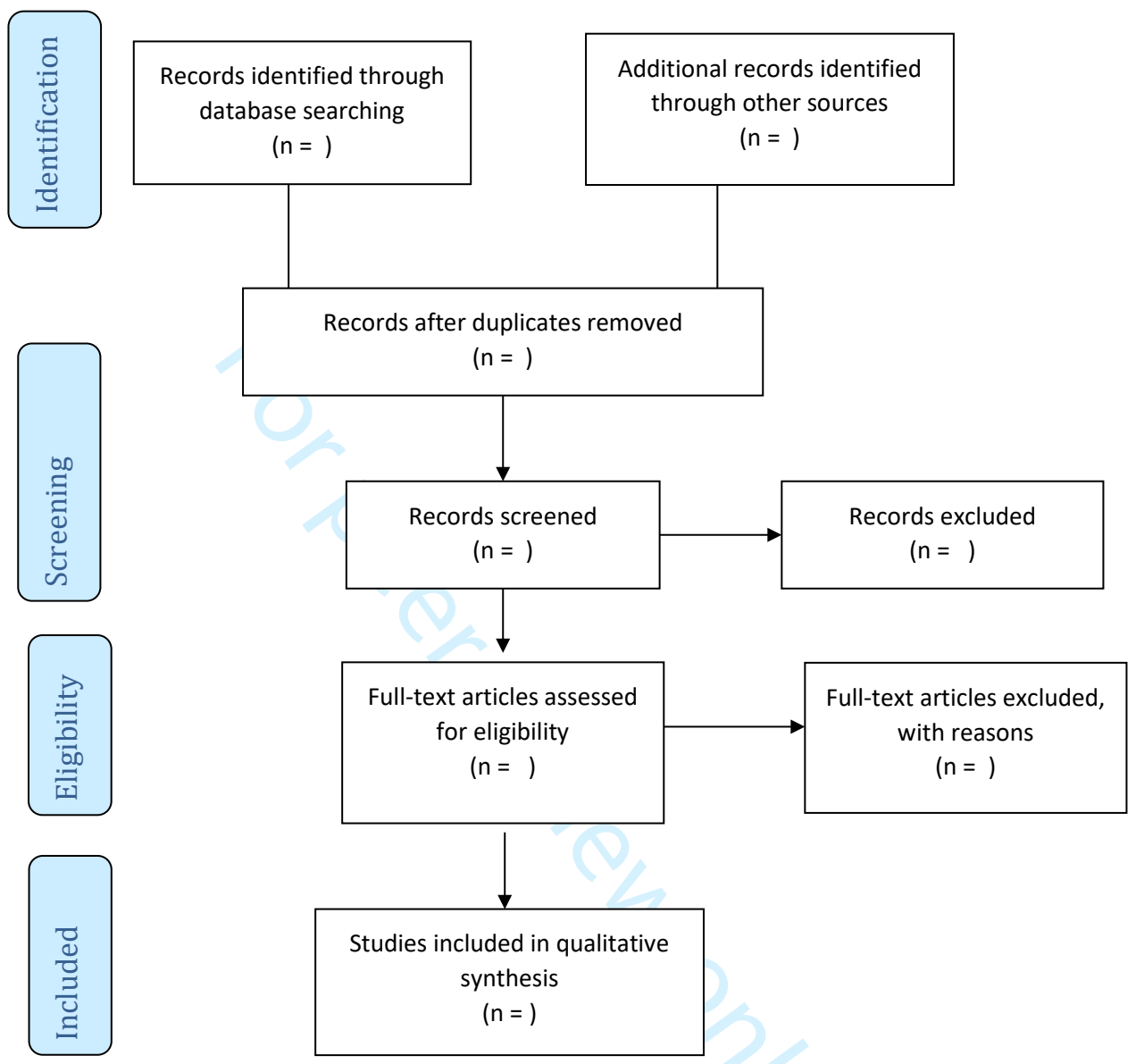
Author and publication year
Study Title
Study aim/objective
Type of study design
Study setting (Country)
Study participants
Significant findings
Food safety outcomes
Conclusions/recommendations

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1 **Figure**



23 **Figure 1:** PRISMA 2009 Flow Diagram [19]

Supplementary file 1: PRISMA-P 2015 Checklist

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title: Mapping Evidence of Food Safety at Transport stations in Africa: A Scoping Review Protocol					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable. This is a systematic scoping review
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6 to 16
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	244 to 246
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-251
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-251
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-252
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	112-124
Objectives	7	Provide an explicit statement of the	<input checked="" type="checkbox"/>	<input type="checkbox"/>	124-126

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PCC)			
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	143-146 and Table 1
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	149-150
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input type="checkbox"/>	<input type="checkbox"/>	199-201 and Figure 1
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	188-196
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	203-209
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 3
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 3

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		main and additional outcomes, with rationale			
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
DATA: A narrative approached will be used to present results					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable

BMJ Open

Mapping Evidence of Food Safety at Transport stations in Africa: A Scoping Review Protocol

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2019-035879.R2
Article Type:	Protocol
Date Submitted by the Author:	25-May-2020
Complete List of Authors:	Ncama, Busisiwe; University of KwaZulu-Natal College of Health Sciences Kuupiel , Desmond ; University of KwaZulu-Natal College of Health Sciences, Public Health Medicine; Research for Sustainable Development Consult, Duma, Sinegugu; University of KwaZulu-Natal College of Health Sciences Mchunu , Gugu ; University of KwaZulu-Natal College of Health Sciences Guga , Phindile ; University of KwaZulu-Natal College of Health Sciences Slotow, Rob; University of KwaZulu-Natal
Primary Subject Heading:	Public health
Secondary Subject Heading:	Health policy, Public health, Evidence based practice
Keywords:	Public health < INFECTIOUS DISEASES, PREVENTIVE MEDICINE, PUBLIC HEALTH, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Health & safety < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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1 Mapping Evidence of Food Safety at Transport stations in Africa: A 2 Scoping Review Protocol

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3 31 **Abstract**
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5 32 **Introduction:** In Africa, travels, urbanization, and changing consumer habits, are increasing
6 33 the number of people buying and eating food prepared/sold at public spaces including transport
7 34 stations, particularly in the urban and peri-urban areas. Although food trading in such public
8 35 spaces serves as a source of livelihood for many people, unsafe food can have a negative impact
9 36 on health. We, therefore, aim to systematically explore and examine the literature, and describe
10 37 the evidence on food safety (food handling, storage, preparation and sale, packaging of food
11 38 when sold, hygiene of sale venue, and quality (nutrition) of food sold/purchased/eaten) at
12 39 transport stations to inform policy, as well as identify research gaps for future studies in Africa.

13 40 **Methods and Analysis:** We will employ the Arksey & O'Malley framework, Levac et al.
14 41 recommendations, and the Joanna Briggs Institute guidelines to guide this study. We will
15 42 conduct a comprehensive search in PubMed, SCOPUS, Web of Science, Google Scholar, and
16 43 EBSCOhost (Academic search complete, CINAHL with Full-text, and Health Source) from
17 44 inception to December 2019 for relevant peer-review articles using a combination of
18 45 keywords/search terms with no limitations. We will also search for relevant literature from the
19 46 reference list of all included articles. Two investigators will independently screen the articles
20 47 in parallel at the abstract and full-text phases using the eligibility criteria as a guide. Data
21 48 extraction will be done using a piloted data extraction form designed in a Microsoft ® Word
22 49 tabular format. Afterward, the extracted data will be collated into themes and sub-themes,
23 50 summarized, and the results reported utilizing a narrative approach. We will the Preferred
24 51 Reporting Items for Systematic Reviews and Meta-analyses: Extension for scoping reviews
25 52 checklist to report this study results.

26 53 **Ethics and Dissemination:** Ethics approval not required. All sources of data will be adequately
27 54 cited and added to the reference list. We will present the final scoping review results at the
28 55 appropriate workshops, meetings, conferences, as well as submit for peer review and
29 56 publication in a scientific journal.

30 57 **Keywords:** Food safety, Transport stations, Taxi ranks, Car parks, Bus stops, Automobile
31 58 stations, Africa
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3 61 **Article summary**
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6 62 **Strengths and limitations of this study**
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- 9 63 • This will be the first scoping review to systematically explore literature and describe
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11 64 the evidence on food safety at transport stations to inform policy, as well as identify
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13 65 research gaps for future studies in Africa
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15 66 • A comprehensive search for potentially eligible articles will be conducted in four
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17 67 electronic databases, and websites of international organizations.
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19 68 • The scoping review permits the inclusion of all types of study designs, and it
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21 69 encompasses both published and grey literature.
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23 70 • Boolean words AND/OR as well as medical subject heading (MeSH) terms will be
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25 71 included in the electronic search strategy to capture all relevant studies.
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27 72 • This study limitation is the use of only four databases, which may potentially result in
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29 73 missing relevant articles indexed in other electronic databases.
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89 **Background**

90 Food is one of the major modes of disease transmission for microbial, chemical, and physical
91 hazards. Food containing harmful bacteria, viruses, parasites or chemical substances can cause
92 more than 200 different diseases – ranging from diarrhea to cancers [1]. Although unsafe food
93 can have a significant impact on health in both high-income and low-and middle-income
94 countries (LMICs), the impact is much higher in LMICs [2, 3]. Globally, it is estimated that
95 unsafe food results in about 600 million cases of foodborne diseases and close to 420 000
96 deaths with about 30% of all foodborne deaths occurring among children less than 5 years
97 annually [1, 2]. The WHO further estimates that eating unsafe food results in approximately 33
98 million years of healthy lives lost (DALYs) worldwide every year [1]. As a result, in 2006, the
99 World Health Organization (WHO) declared foodborne diseases as well as food-related
100 diseases and food safety as a major public health concern [4, 5]. Unsafe food creates a vicious
101 cycle of disease and malnutrition, particularly affecting infants, young children, the elderly,
102 and the sick [6]. To this end, access to safe, and nutritious and sufficient food is key to
103 sustaining life and promoting good health.

104 Food safety may denote the prevention of biological or non-biological hazards in food, whether
105 chronic or acute, that may make food harmful to the health of the consumer [7]. Food safety is
106 about producing, handling, storing and preparing food in such a way as to prevent infection
107 and contamination in the food production chain, and to help ensure that food quality and
108 wholesomeness are maintained to promote good health [7]. In addition to contributing to food
109 and nutrition security, a safe food supply also supports national economies, trade, and tourism,
110 stimulating sustainable development [7, 8]. The globalization of food trade, a growing world
111 population, climate change and rapidly changing food systems have an impact on the safety of
112 food [7, 8].

113 In most LMICs, food trading at transport stations such as taxi ranks, bus stations, and lorry
114 parks is fast-growing, particularly in the urban and peri-urban areas. It is evident that over 2.4
115 billion people eat food sold by vendors at public spaces including transport stations every day
116 worldwide [9, 10]. This may be due to several reasons such as the thinking that the foods sold
117 in public spaces are appealing, ready-to-eat, convenience, and of low cost and savory taste [11-
118 13]. Food trading in public spaces serves as a source of livelihood for many households in
119 LMICs [8, 11, 13]. Although the food sold at transport stations may also have great nutritional
120 value depending on the type of ingredients and the conditions under which the food was
121 prepared and served to the customer, it may as well cause ill-health arising from contamination

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3 122 of the food. Since the food is most often prepared and sold in an environment that often lacks
4 123 sanitary facilities and health surveillance, and at times, not regulated by the appropriate local
5 124 authorities in most LMICs [13-15]. Despite this, no study to the best of our knowledge has
6 125 mapped literature on food safety at transport stations in Africa. We, therefore, intend to
7 126 systematically search for literature, examine the scope of the literature and describe the
8 127 evidence on food safety at transport stations in Africa in order to inform policy. We also
9 128 anticipate identifying gaps from the study findings for future research to improve food safety
10 129 at transport stations such as taxi ranks, bus stations, and lorry parks in Africa.
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131 **Methods**

132 **Design of the study protocol**

133 We will employ an amended Arksey & O'Malley framework incorporating the Levac et. al.
134 recommendation [16, 17] to guide this scoping review. The Arksey & O'Malley framework
135 includes the following: research question identification; identifying relevant studies; selection
136 of study; data charting, collating, summarising and reporting the findings, and consultation.
137 However, we will exclude the consultation stage because this review is nested in a larger study
138 that already includes stakeholder consultation. We followed the preferred reporting items for
139 systematic and meta-analysis extension for protocols (PRISMA-P) guidelines to develop this
140 protocol (Supplementary file 1). However, we will the Preferred Reporting Items for
141 Systematic Reviews and Meta-analyses: Extension for scoping reviews checklist to report this
142 study results.

143 **Identifying the research question**

144 This scoping review question shall be:

145 What is the scope of evidence on food safety at transport stations in Africa? Table 1 presents
146 the Population, Concept, and Context (PCC) mnemonic used to inform the eligibility of this
147 proposed review [18].
148

149 **Identify relevant studies**

150 We will conduct a comprehensive search in PubMed, SCOPUS, Google scholar, Web of
151 Science, and EBSCOhost (Academic search complete, CINAHL with Full-text, and Health
152 Source) from inception to December 2019 for relevant articles. We will develop the search
153 strategy in consultation with a subject Librarian at the University of KwaZulu-Natal so as to
154 enable us capture all/most relevant articles for the study. We will use a combination of the

1
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3 155 following keywords: “transport station” OR “taxi rank” OR “automobile station” OR “bus
4 156 station” OR “lorry park” OR “car park” OR “transport hub” OR “streets” OR “public space”
5 157 AND "food safety" OR "food handling" OR "food storage" OR “food preparation” OR “food
6 158 packaging” OR “food sale” OR “food vend” OR “food sale” OR “food sold” OR “food
7 159 hawking” OR “food purchase” in order to enable us capture all appropriate peer-review articles.
8 160 We will include Booleans terms AND/OR and medical subject heading (MeSH) terms in our
9 161 search. Date, study design, and language limitations will be removed during the databases
10 162 search. We will also search the reference list of all included studies for articles presenting useful
11 163 information to address this proposed scoping review question. The search date, database,
12 164 keywords, number of retrieved articles, number of eligible articles, and all other relevant search
13 165 records will be documented appropriately in detail. Table 2 illustrates a full search strategy in
14 166 PubMed database for this proposed scoping review study.

167 **Eligibility criteria and study selection**

168 The eligibility criteria will be as outlined below.

169 ***Inclusion criteria:***

170 This shall include the following:

- 171 ▪ Studies reporting evidence from Africa,
- 172 ▪ Studies presenting evidence on food safety,
- 173 ▪ Studies reporting from transport stations,
- 174 ▪ Studies published in English, and
- 175 ▪ Primary studies focusing on food safety at transportations

177 ***Exclusion criteria***

178 We shall exclude the following:

- 179 ▪ Studies presenting evidence from other countries outside Africa,
- 180 ▪ Studies presenting evidence of food safety from other sites such as homes, restaurants,
181 markets, and hotels, and schools,
- 182 ▪ Studies published in other languages such as French, Arabic, and Portuguese, and
- 183 ▪ Review studies

185 ***Study selection***

186 The screening for potentially eligible studies will be done in three phases. In phase one, a

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3 187 comprehensive article search in the electronic databases will be conducted by one investigator
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5 188 and import all eligible articles to a new endnotes X9 library created for the review. To clean
6
7 189 the library, all duplicates will be deleted and subsequently shared with the co-investigators. In
8
9 190 phase two, two investigators will independently screen the abstracts in parallel guided by the
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11 191 eligibility criteria designed using a google form. All disagreements between the investigators
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13 192 in terms of their response at this stage will be addressed through discussions among the
14
15 193 investigators until a consensus is reached. Similarly, in the third phase, two investigators will
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17 194 independently screen all the full-text articles as described in phase two, however, a third
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19 195 investigator will be engaged to resolve any discrepancies in their responses. Cohen's kappa
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21 196 statistic will be calculated following full text screening to demonstrate the level of agreement
22
23 197 between reviewers. All articles retrieved from the reference list of included studies will also be
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25 198 screened using the same process. Where a full-text article cannot be retrieved or not accessible
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27 199 from the online databases, we will seek assistance from the University of KwaZulu-Natal
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29 200 library or write to the authors to request the full-text for screening. An amended PRISMA
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31 201 (Preferred Reporting Items for Systematic Review and Meta-Analyses) flow diagram will be
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33 202 used to report the search and screening results [19] (Figure 1).

32 203 **Charting the data**

34 204 We will design a data extraction form using Microsoft® Word in a tabular format. To ensure
35
36 205 the trustworthiness and reliability of the data, two independent investigators will pilot the data
37
38 206 extraction form using a random sample of ten percent of the included articles in parallel.
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40 207 Subsequently, the data extraction form will be revised if necessary, to ensure its rigor and
41
42 208 ability to capture all relevant data to answer the review question. We will keep the data
43
44 209 extraction form updated throughout this process until all relevant information has been
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46 210 extracted from the included articles. Table 3 shows the data extraction form that will be used
47
48 211 for this scoping review study.

49 213 **Collating, summarizing, and reporting the results**

51 214 We will present information about the included articles that are aligned with the research
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53 215 question of this proposed scoping review study. All relevant data from the eligible studies will
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55 216 be extracted using the piloted data-extraction form to answer the review question. Both
56
57 217 deductive (for characteristics of the included articles) and inductive (for study
58
59 218 findings/outcomes) approaches will be used to extract relevant data. Thematic analysis will be
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219 utilised to collate the study findings into themes and sub-themes. Then, a narrative summary
220 of the themes and sub-themes will be reported. To ensure rigor, the analysis will be conducted
221 by two investigators with input from collaborators. The PRISMA extension designed for the
222 scoping reviews checklist will be utilized to guide the reporting of the results of this scoping
223 review. Afterward, a meta-analysis may be conducted using quantitative data if possible.

225 **Ethics and dissemination**

226 Not required. All sources of data will be adequately referenced. We will present the final
227 scoping review results at the appropriate workshops, meetings, conferences, as well as submit
228 for peer review and publication in a scientific journal.

230 **Patient and Public Involvement**

231 No patient involved

233 **Statements**

234 **Acknowledgments**

235 Support for this work was provided by the Sustainable and Healthy Food Systems (SHEFS)
236 Programme, supported through the Wellcome Trust's Our Planet, Our Health Programme

238 **Authors' contributions**

239 BPN, DK, SED, SM, and RS conceptualized the study. DK wrote the manuscript and PG
240 contributed to the writing. BPN, SED, GM, and RS critically review the manuscript and made
241 revisions. DK wrote the final draft manuscript and all the authors approved it.

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245 Programme, supported through the Wellcome Trust's Our Planet, Our Health Programme
246 [grant number: 205200/Z/16/Z]. The funder played no role in the literature search and writing
247 of the manuscript.

249 **Competing interests**

250 None declared

252 **References**

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301 **Tables**

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3 308 **Table 1:** PCC framework for defining the eligibility of the studies for the primary research
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5 309 question
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P- Population	Transport stations: This will include bus stations, lorry parks, taxi ranks, and automobile stations, and bus stops.
C-Concept	Food safety: This include food handling, storage, preparation and sale, packaging of food when sold, hygiene of sale venue, and quality (nutrition) of food sold/purchased/eaten.
C-Context	African

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323 **Table 2:** A full search strategy in PubMed illustrating the feasibility of the proposed scoping
 324 review

Date	Database	Keywords	Search results
06/04/2020	PubMed	(("transport"[All Fields]) AND station[All Fields]) OR (taxi[All Fields] AND rank[All Fields]) OR (("automobiles"[MeSH Terms] OR "automobiles"[All Fields] OR "automobile"[All Fields]) AND station[All Fields]) OR "bus station"[All Fields] OR ("motor vehicles"[MeSH Terms] OR ("motor"[All Fields] AND "vehicles"[All Fields]) OR "motor vehicles"[All Fields] OR "lorry"[All Fields]) AND park[All Fields]) OR "car park"[All Fields] OR "transport hub"[All Fields] OR "streets"[All Fields] OR "public space"[All Fields] AND "food safety"[All Fields] OR "food handling"[All Fields] OR "food storage"[All Fields] OR "food preparation"[All Fields] OR "food packaging"[All Fields] OR "food sale"[All Fields] OR ("food"[MeSH Terms] OR "food"[All Fields]) AND vend[All Fields]) OR "food sale"[All Fields] OR "food sold"[All Fields] OR ("food"[MeSH Terms] OR "food"[All Fields]) AND ("hawks"[MeSH Terms] OR "hawks"[All Fields] OR "hawking"[All Fields])) OR "food purchase"[All Fields] AND (("0000/01/01"[PDAT] : "2019/12/31"[PDAT]) AND "humans"[MeSH Terms])	13644

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328 **Table 3:** Data Extraction Form

Author and publication year
Study Title
Study aim/objective
Type of study design
Study setting (Country)
Study participants
Significant findings
Food safety outcomes
Conclusions/recommendations

329

330 **Figure**

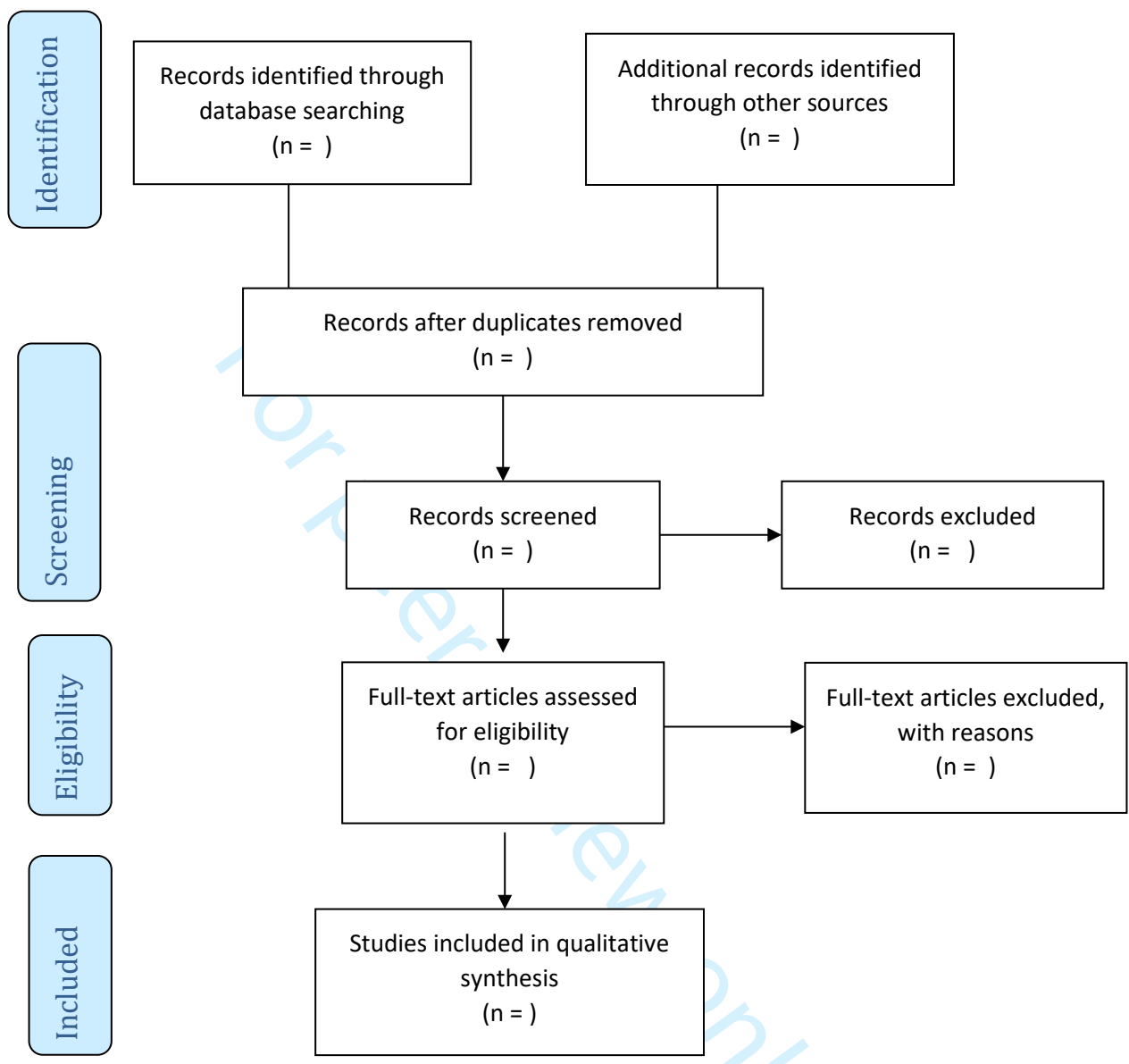
331 **Figure 1:** PRISMA 2009 Flow Diagram

332 **Supplementary File**

333 **Supplementary file 1:** PRISMA-P Checklist

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1 **Figure**



23 **Figure 1:** PRISMA 2009 Flow Diagram [19]

Supplementary file 1: PRISMA-P 2015 Checklist

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title: Mapping Evidence of Food Safety at Transport stations in Africa: A Scoping Review Protocol					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable. This is a systematic scoping review
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6 to 16
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	244 to 246
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-251
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-251
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	249-252
INTRODUCTION					

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	112-124
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PCC)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	124-126
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	143-146 and Table 1
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	149-150
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input type="checkbox"/>	<input type="checkbox"/>	199-201 and Figure 1
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	188-196
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	203-209
Data items	12	List and define all variables for which data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 3

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications			
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 3
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
DATA: A narrative approached will be used to present results					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable