

1 **Patient satisfaction with nursing care in Ethiopia: A systematic review and**
2 **meta-analysis**

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31 **Patient satisfaction with nursing care in Ethiopia: A systematic review and** 32 **meta-analysis**

33 *Henok Mulugeta*¹, Fasil Wagnew¹, Getenet Dessie², Henok Biresaw³, Tesfa Dejenie Habtewold⁴*

34 **Abstract**

35 **Background:** Patient satisfaction with nursing care has been considered as the most important
36 predictor of the overall patient satisfaction with hospital service and quality of health care service
37 at large. However, the national level of patient satisfaction with nursing care remains unknown.
38 Hence, the objective of this systematic review and meta-analysis was to estimate patient
39 satisfaction with nursing care in Ethiopia.

40 **Methods:** Studies were accessed through an electronic web-based search strategy from PubMed,
41 Cochrane Library, Google Scholar, Embase, PsycINFO and CINAHL by using combination
42 search terms. Qualities of each included article assessed by using a modified version of the
43 Newcastle-Ottawa Scale for cross-sectional studies. All statistical analyses were done using
44 STATA version 14 software. The Preferred Reporting Items for Systematic Reviews and Meta-
45 Analyses (PRISMA) guideline was followed for reporting results.

46 **Results:** Of 1,166 records screened, 15 studies with 6091 participants were included. The
47 estimated pooled level of patient satisfaction with nursing care in Ethiopia was 55.15% (95% CI
48 (47.35, 62.95%)). Based on the subgroup analysis, the estimated level of patient satisfaction was
49 61.84% (95% CI: 44.49, 79.2) in Addis Ababa, 54.24 % (95%CI: 46.84, 61.65) in Amhara
50 region, 44.06% (95%CI: 38.09, 50.03) in SNNP, and 53.02 % (95% CI: 50.03, 56.00) in other
51 regions. Patients who have one nurse in charge [(OR 1.08(0.45, 2.62)], with no history of
52 previous hospitalization [(OR 1.37(0.82, 2.31)], living in the urban area [(OR 1.07(0.70, 1.65)], /
53 and those who have no comorbid disease [(OR 1.08(0.48, 2.62)] were more likely to be satisfied
54 with nursing care than their counterparts even though it was not statistically significant.

55 **Conclusion:** This meta-analysis revealed that about one in two patients were not satisfied with
56 the nursing care provided in Ethiopia. Therefore, Ministry of Health should give more emphasis
57 to the quality of nursing care in order to increase patient satisfaction which is important to
58 improve the overall quality of healthcare service.

59 **Keywords:** *Nursing care, patient satisfaction, systematic review, meta-analysis, Ethiopia.*

60 **Background**

61 Quality healthcare delivery and creation of patient satisfaction are the primary goals of
62 hospitals[1]. One of the ways of evaluating the performance of health care is assessing patient
63 satisfaction with the nursing care since it was considered as a fundamental indicator of quality
64 health care provided in hospitals[2, 3].

65 Patient satisfaction simply described as the value and reaction of patients towards the care they
66 received[4]. Moreover, according to the American Nursing Association patient satisfaction
67 defined as patients' value and attitude of care they received from the nursing staffs during their
68 hospitalization[5].

69 Today, patient satisfaction is the major concern of healthcare institutions. Satisfied patients are
70 more likely to have a good relationship with the nurses which result in improved quality of
71 care[6, 7]. Literature also suggests that patient satisfaction is directly linked to better patient
72 outcomes. Furthermore, achieving patient satisfaction with nursing care result in better patient
73 compliance with health care regimens and better health outcomes[8].

74 Nurses are a pivotal part of the health care system and they spent more time with patients.
75 Moreover, nurses provide about 80% of primary health care service in the hospital. Hence,
76 patient satisfaction with the nursing care can determine the overall satisfaction of the hospital
77 service provided [8-10].

78 Determining the factors that influence patient satisfaction is important for nurses to improve the
79 quality of nursing care. Patient satisfaction with nursing care can be affected by numerous
80 factors since it is a complex and multidimensional concept[8, 11]. For example, some literature
81 suggested that availability of an assigned nurse, behaviors of nurses, the surrounding physical

82 environment, and history of the previous hospitalization are the major determinant factors for the
83 overall patient satisfaction[4, 8, [12-14](#)]. While others showed that sociodemographic factors like
84 age, residence and educational level are the most determining factors for patient satisfaction[[15-](#)
85 [18](#)].

86 In recent years, many studies have been conducted to determine the level of patient satisfaction
87 with nursing care. For instance, a study was done in Iraq[[19](#)], Brazil[[20](#)] and Egypt[[21](#)] showed
88 that patients were highly satisfied with the nursing care. Additionally, the overall level of patient
89 satisfaction with nursing care is 69% in Iran[[22](#)], 67% in Kenya[[23](#)], and 33% in Ghana[[24](#)]. On
90 the contrary, the results of the study done in India revealed that most of the hospitalized patients
91 have poor perception regarding nursing care[[25](#)].

92 The Ethiopian Federal Ministry of Health is striving to provide quality health care service in the
93 country by developing different quality management guidelines and health sector development
94 plans in order to increase patients' satisfaction with the healthcare service[[26-28](#)].

95 Though few patient satisfaction surveys with nursing care have been conducted previously in
96 different areas of Ethiopia, the overall level of patient satisfaction with nursing care in the
97 country level remains unknown. Moreover, they are not consistent and inconclusive to determine
98 the level of patient satisfaction at the country level. In addition, determining the level of patient
99 satisfaction with nursing care appears crucial to monitor and improve the quality of nursing care.
100 Therefore, the objective of this systematic review and meta-analysis is to estimate the pooled
101 level of patient satisfaction with nursing care and to identify the contributing factors in Ethiopia.

102 **Methods**

103 **Design and search strategy**

104 The procedure for this systematic review and meta-analysis was designed in accordance with the
105 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)
106 guidelines[29]. We searched PubMed, Cochrane Library, Google Scholar, CINAHL, Embase,
107 and PsycINFO database for studies reporting the level of patient satisfaction with nursing care
108 from study conception to May, / 2018. EndNote (version X8) reference management software
109 was used to download, organize, review and cite the related articles. Comprehensive search was
110 performed using the following search terms: “Patient satisfaction”, “satisfaction”, “determinants
111 of patient satisfaction”, “nursing care”, and “Ethiopia”. “AND” and “OR”. Boolean operators
112 were used to combine search terms. Furthermore, we manually searched cross references in order
113 to identify additional relevant articles.

114 **Inclusion and Exclusion criteria**

115 We included studies reporting patient satisfaction with nursing care among admitted patients and
116 its determinants in irrespective of their sex and other demographic characteristics. Studies were
117 also included if they assessed the determinants of patient satisfaction with nursing care. Both
118 published and gray literature reported in the English language regardless of date of
119 study/publication were also included. Nevertheless, articles without full text and with poor
120 quality were excluded. Two authors (H.M. and G.D.) independently evaluated the eligibility of
121 all retrieved studies, and any disagreement and inconsistencies were resolved by discussion and
122 consensus.

123 **Data extraction and quality assessment**

124 After the screening was completed, the relevant data from each included article were extracted
125 using a pre-piloted data extraction format prepared in a Microsoft Excel spreadsheet. Data on

126 author/s name, year of publication, study area/Region, health institution, study design, sample
127 size, prevalence and determinant factors were extracted from each included article by three
128 independent authors (H.M. FW, and G.D). Disagreement and inconsistencies were resolved by
129 discussion among the authors.

130 The Joanna Briggs Institute Prevalence Critical Appraisal Tool for use in systematic review for
131 prevalence study was used for critical appraisal of studies[30]. Moreover, methodological and
132 other quality of each article was assessed based on a modified version of the Newcastle-Ottawa
133 Scale for cross-sectional study adapted from Modesti et al[31]. Two authors (HM, HB)
134 independently assessed the quality of each article. Whenever it is necessary a third reviewer
135 (TDH) were consulted. Any disagreement was resolved through discussion and consensus.

136 **Statistical Analysis**

137 The extracted data were transferred to STATA version 14 for meta-analysis. Meta-analysis of the
138 level of patient satisfaction with nursing care was carried out using a random effects model,
139 generating a pooled effect size with 95% confidence interval (CI). The effect of selected
140 determinant variables was independently analyzed and was presented using a forest plot. We also
141 reported measures of association using the ORs with a 95% CI. All data manipulation and
142 statistical analyses were performed using Stata version 14.0 software.

143 Heterogeneity across studies was evaluated using I^2 test statistics and Cochrane Q statistics. I^2
144 statistics is used to quantify the percentage of total variation in study estimate due to
145 heterogeneity. I^2 ranges between 0 and 100%. $I^2 \geq 75\%$ indicate very high heterogeneity across
146 the studies. A p-value of less than 0.05 was used to declare significant heterogeneity[32, 33]. The
147 random effects model using Der Simonian and Laird method is the most common method in a

148 meta-analysis to adjust for the observed variability[34, 35]. Furthermore, the source of
149 heterogeneity was also assessed by subgroup analysis based on region and meta-regression.

150 A Funnel plot was used for visual assessment of publication bias. Asymmetry of the funnel plot
151 is an indicator of potential publication bias[36]. We also employed Egger's and the Begg 's test
152 to determine if there was significant publication bias. A p-value of less than 0.05 was considered
153 significant[37]. Finally, we performed a sensitivity analysis to describe whether the pooled effect
154 size was influenced by individual studies.

155 **Results**

156 **Search result and study characteristics**

157 The electronic online search yielded 1166 records, of which 42 duplicate records identified and
158 removed. Title and abstract screening result in the exclusion of 1042 non-relevant articles. From
159 the remaining 82 articles, 28 articles were excluded since they are on general hospital service.
160 Then, 54 articles underwent for full-text screening. However, 39 articles were excluded based on
161 our predetermined eligibility criteria. Finally, a total of 15 articles included in the meta-analysis
162 (Figure 1).

163 A total of 15 studies with 6,091 participants were included in this meta-analysis. Among 15
164 studies five[14, 28, 38-40] were conducted in Addis Ababa, five [26, 41-44] were conducted in
165 Amhara region, two [27, 45] were in SNNP region, and three studies[12, 46, 47] were in other
166 regions(Oromia, Harari and Tigray). All studies were a cross-sectional study conducted among
167 admitted adult patients in different hospitals of Ethiopia (Table1).

168 Figure 1: PIRSMA Flowchart diagram of the study selection

169 Table 1: Characteristics of studies included in the meta-analysis of patient satisfaction with nursing care

S.No	Author/s[reference]	Publication Year	Study area, Region	Health Facility Name	Study Design	Sample Size	Proportion % (95%CI)
1	Mulugeta M. et al [28]	2014	Addis Ababa	Black Lion Hospital	Cross-sectional	374	90.1(87.1,93.1)
2	Getachew G. et al [38]	2016	Addis Ababa	Menelik Hospital	Cross-sectional	372	46.7(41.6,51.8)
3	Solomon Bekele [39]	2009	Addis Ababa	Addis Ababa Public Hospitals	Cross-sectional	435	56.3(51.6,61.0)
4	Bekele Chaka [40]	2005	Addis Ababa	Addis Ababa Public Hospitals	Cross-sectional	631	67.0(63.3,70.7)
5	Melsew Getinet [14]	2017	Addis Ababa	Addis Ababa Public Hospitals	Cross-sectional	422	48.8(44.0,53.6)
6	Melesse Belayneh [26]	2016	Bahir Dar, Amhara	Felege Hiwot Referral Hospital	Cross-sectional	236	44.9(38.6,51.2)
7	Negash AK. et al [43]	2014	Bahir Dar, Amhara	Felege Hiwot Referral Hospital	Cross-sectional	373	67.1(62.3,71.9)
8	Sharew NT. et al [44]	2018	Debre Birhan, Amhara	Debre Birhan Referral Hospital	Cross-sectional	384	49.2(44.2,54.2)
9	Alemu S. et al [41]	2014	Debre Markos, Amhara	Debre Markos Referral Hospital	Cross-sectional	392	56.9(52.0,61.9)
10	Haile Eyasu K. et al [42]	2016	Dessie, Amhara	Dessie Referral Hospital	Cross-sectional	374	52.5(47.4,57.6)
11	Mensa M. et al [27]	2017	Arba Minch, SNNP	Arba Minch General Hospital	Cross-sectional	236	40.9(35.5,46.3)
12	Legesse MT. et al [45]	2016	Hawassa, SNNP	Hawassa University Specialized Hospital	Cross-sectional	406	47.0(42.2,51.9)
13	Jiru TG. et al [46]	2017	Nagele Borena, Oromia	Nagele Borena And Adola General Hospital	Cross-sectional	413	55.9(51.1,60.7)
14	Ahmed T. et al [12]	2014	Harar, Harari	Public Hospitals in Eastern Ethiopia	Cross-sectional	582	52.7(48.6,56.8)
15	MollaTeferi [47]	2017	Mekelle, Tigray	Ayder Specialized Hospital	Cross-sectional	374	50.3(45.2,55.4)

171 **Patient satisfaction with nursing care**

172 The pooled effect size of patient satisfaction with nursing care using the fixed effect model
173 showed a significant heterogeneity across the studies. Therefore, we performed the analysis with
174 a random effects model with 95% CI in order to adjust for the observed variability. Using
175 random effects model, the overall estimated pooled level of patient satisfaction with nursing care
176 as reported by the 15 studies was 55.15% (95% CI (47.35, 62.95%)) with significant
177 heterogeneity between studies ($I^2=97.7$, $P=0.001$). The pooled effect size of patient satisfaction
178 with nursing care presented using forest plot (Figure2).

179 Figure 2: Forest plot showing the pooled level of patient satisfaction with nursing care

180 Subgroup analysis by region in Ethiopia was conducted to compare the level of patient
181 satisfaction with nursing care. Based on the subgroup analysis, the highest estimated level of
182 patient satisfaction was observed in Addis Ababa (61.84% (95% CI: 44.49, 79.2), $I^2 = 98.9\%$),
183 followed by Amhara region (54.24% (95% CI: 46.84, 61.65), $I^2 = 90.3\%$). Moreover, the lowest
184 estimated level of patient satisfaction was observed in SNNP region (44.06% (95% CI: 38.09,
185 50.03), $I^2= 63.4\%$) (Figure 3).

186 Figure 3: Subgroup analysis by regions on the level of patient satisfaction with nursing care

187 **Investigation of heterogeneity and publication bias**

188 Given that the result of this meta-analysis revealed a statistically significant heterogeneity among
189 studies (I^2 statistics=97.7%), we performed subgroup analysis by region in order to minimize
190 heterogeneity (Figure 3). Furthermore, to identify the possible source of heterogeneity, we
191 performed meta-regression using sample size and publication year as covariates. However, the

192 result of the meta-regression analysis showed that both covariates were not statistically
193 significant for the presence of heterogeneity (Table 2).

194 Table 2: Meta-regression analysis of factors with heterogeneity of patient satisfaction with
195 nursing care in Ethiopia, 2018.

Heterogeneity source	Coefficients	Std. Err.	P-value
Publication Year	-1.3836	5.738	0.814
Sample size	0.01500	0.190	0.939

196 Presence of publication bias was examined using funnel plot and Egger's test. Visual inspection
197 of the funnel plot suggests symmetry (Figure 4). However, the result of Egger's test is
198 statistically significant for the presence of publication bias ($p=0.001$). Moreover, the result of
199 sensitivity analyses using random effects model suggested that no single study influenced the
200 overall estimate (Figure 5).

201 Figure 4: Funnel plot to test publication bias of the 15 studies

202 Figure 5: Result of sensitivity analysis of the 15 studies

203 **Determinant factors**

204 **Availability of assigned nurse in charge of individual care**

205 Patients who had one nurse in charge of their care had 1.08 higher chance of being satisfied with
206 nursing care compared to those patients without the assigned nurse in charge of their care
207 although not statistically significant(OR: 1.08 (95% CI (0.45,2.62)) (Figure 6). The heterogeneity
208 test ($p=0.011$) showed a significant evidence of variation across studies. Moreover, the result of
209 Egger's test showed no statistically significant evidence of publication bias ($P=0.541$).

210 Figure 6: Forest plot showing the association between patient satisfaction and availability of one
211 assigned nurse in charge of patient care

212 **Place of residence**

213 Patients living in the urban area had 1.07 higher chance of being satisfied with nursing care
214 compared to those patient in a rural area although not statistically significant (OR: 1.07 (95% CI
215 (0.70, 1.65)) (Figure 7). The heterogeneity test (P= 0.071) showed no significant evidence of
216 variation across studies, Moreover, the result of Egger's test showed a significant evidence of
217 publication bias(P=0.012).

218 Figure 7: Forest plot showing the association between patient satisfaction and residence

219 **History of admission**

220 Patients who had no history of previous hospitalization had 1.37 higher chance of being satisfied
221 with nursing care compared to those patients with a history of admission although not
222 statistically significant (OR: 1.37 (95% CI (0.82,2.31)) (Figure 8). The heterogeneity test (P=
223 0.001) showed a significant evidence of variation across studies. Moreover, the result of Egger's
224 test showed no statistically significant evidence of publication bias (P=0.25).

225 Figure 8: Forest plot showing the association between patient satisfaction and history of
226 admission

227 **Presence of other diseases**

228 Patients who had no comorbid disease had 1.08 higher chance of being satisfied with nursing
229 care compared to those patients without comorbidity (OR: 1.08 (95% CI (0.48, 2.39)) (Figure 9).
230 The heterogeneity test showed a significant evidence of variation across studies, P= 0.001.
231 Moreover, the result of Egger's test to examine publication bias showed no statistically
232 significant evidence of publication bias (P=0.91).

233 Figure 9: Forest plot showing the association between patient satisfaction and presence of other
234 diseases

235 **Discussion**

236 Within the healthcare of today, nurses spend more time by giving bedside nursing care for
237 admitted patients than any other healthcare professionals in the hospital. Hence, patient
238 satisfaction with nursing care is a definitive determinant of the quality of healthcare in the
239 hospital [[19](#), [48](#), [49](#)]. In this systematic review and meta-analysis, we estimated the pooled
240 proportion of satisfied patients with nursing care in Ethiopia.

241 Assessing the level of patient satisfaction with nursing care is crucial to improving the quality of
242 care, also patient satisfaction has been considered as an indicator of patient outcome[[50](#)].
243 Moreover, patients' overall satisfaction has a positive correlation with the health care provided at
244 the hospital[[51](#)].

245 The result of this meta-analysis revealed that the overall estimated pooled level of patient
246 satisfaction with nursing care was 55.15%. This finding was similar to previous studies
247 conducted in Serbia and the Philippines in which 51.7% and 57.8% of patients were satisfied
248 with nursing care respectively[[18](#), [52](#)].

249 The level of patient satisfaction with nursing care in our study was lower than other similar
250 studies report of 69% in Iran[[22](#)], 67% in Kenya[[23](#)], 69.4% in Jordan[[53](#)], 82.7% in
251 Malaysia[[5](#)], and 89.6% in Saudi Arabia[[7](#)]. This could be due to poor job satisfaction among
252 Ethiopian nurses, low level of health care service and not well-qualified healthcare professionals
253 in the country.

254 On the other hand, the level of patient satisfaction with nursing care in this study was higher than
255 a study conducted in Ghana which revealed that about 33% of patients were satisfied with their
256 nursing care[[24](#)]. Similarly, our finding was higher than other study conducted in public

257 hospitals of Mosul City to assess patient satisfaction with nursing care which revealed 40% in
258 ibn-Sina, 47% in Al-Jamhory, 42% in Al-Salam and 49% in AL-Kanssa teaching hospital[54].
259 The difference might be due to variation in sociodemographic characteristics of the study
260 participants, sample size, measurement tool used to quantify the level of satisfaction, and others.

261 The result of this meta-analysis has found that patients' residence, availability of assigned nurse
262 in charge, previous history of admission, and the presence of other diseases had an influence on
263 the patients' satisfaction with nursing care even though not statistically significant. A similar
264 studies revealed a significant association between patient satisfaction and previous admission to
265 hospital[54, 55]. Poor quality of care, repeated costs, and bad experience during their past
266 admission might be the possible reasons for patients with a history of admission to be dissatisfied
267 with nursing care. Similar to our finding, a study done in England showed that availability of
268 nurse in charge increases patients level of satisfaction with nursing care[56]. The possible reason
269 might be due to the fact that patients could get a quick response from the available nurse for their
270 needs and demand. Moreover, in our study urban patients were more satisfied than rural patients.
271 This is in agreement with a recent systematic review[57].

272 Even though this review has provided valuable information and best evidence regarding the level
273 of patient satisfaction with nursing care, there were some limitations, which we address below.
274 First, our overall estimates showed significant heterogeneity among studies, so that interpretation
275 of the results has to be taken cautiously. Although we performed subgroup analysis and meta-
276 regression, we could not identify the sources of variability. Second, it was difficult to analyze
277 some additional major factors since they were not examined in a similar fashion across the
278 studies. Third, it was difficult to compare our results with others due to lack of other published

279 systematic review and meta-analysis on patient satisfaction with nursing. Finally, publication
280 bias was appreciated even though it is inevitable in any meta-analysis.

281 **Conclusions and recommendations**

282 The overall level of patient satisfaction with nursing was relatively moderate. Patient satisfaction
283 was influenced by patients' history of admission, residence, availability of assigned nurse, and
284 presence of other diseases even though not statistically significant. This systematic review and
285 meta-analysis provided a national evidence on the level of patient satisfaction with nursing care
286 in Ethiopia. This might be very useful for policymakers to give more emphasis to the quality of
287 nursing care in order to improve the overall quality of healthcare service. Furthermore, the
288 Federal Ministry of health and Hospital administrator should give a great attention to the
289 importance of quality nursing care to increase patient satisfaction.

290 **Abbreviations**

291 **CI:** Confidence Interval, **OR:** Odds Ratio, **PRISMA:** Preferred Reporting Items for Systematic
292 Reviews and Meta-Analyses, **SNNP:** Southern Nations, Nationalities, and Peoples, **WHO:**
293 World Health Organization.

294 **Declarations**

295 **Consent for publication**

296 Not applicable.

297 **Availability of data and materials**

298 The data analyzed during the current systematic review and meta-analysis is available from the
299 corresponding author on reasonable request.

300 **Competing interests**

301 The authors declare that they have no competing interests.

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303 Not applicable.

304 **Ethics approval and consent to participate**

305 Not applicable.

306 **Authors' contributions**

307 HM and GD developed the protocol and involved in the design, selection of study, data
308 extraction, and statistical analysis and developing the initial drafts of the manuscript. FW, TDH
309 and HB involved in data extraction, quality assessment, statistical analysis and revising
310 subsequent drafts. HM and TDH prepared the final draft of the manuscript. All authors read and
311 approved the final draft of the manuscript.

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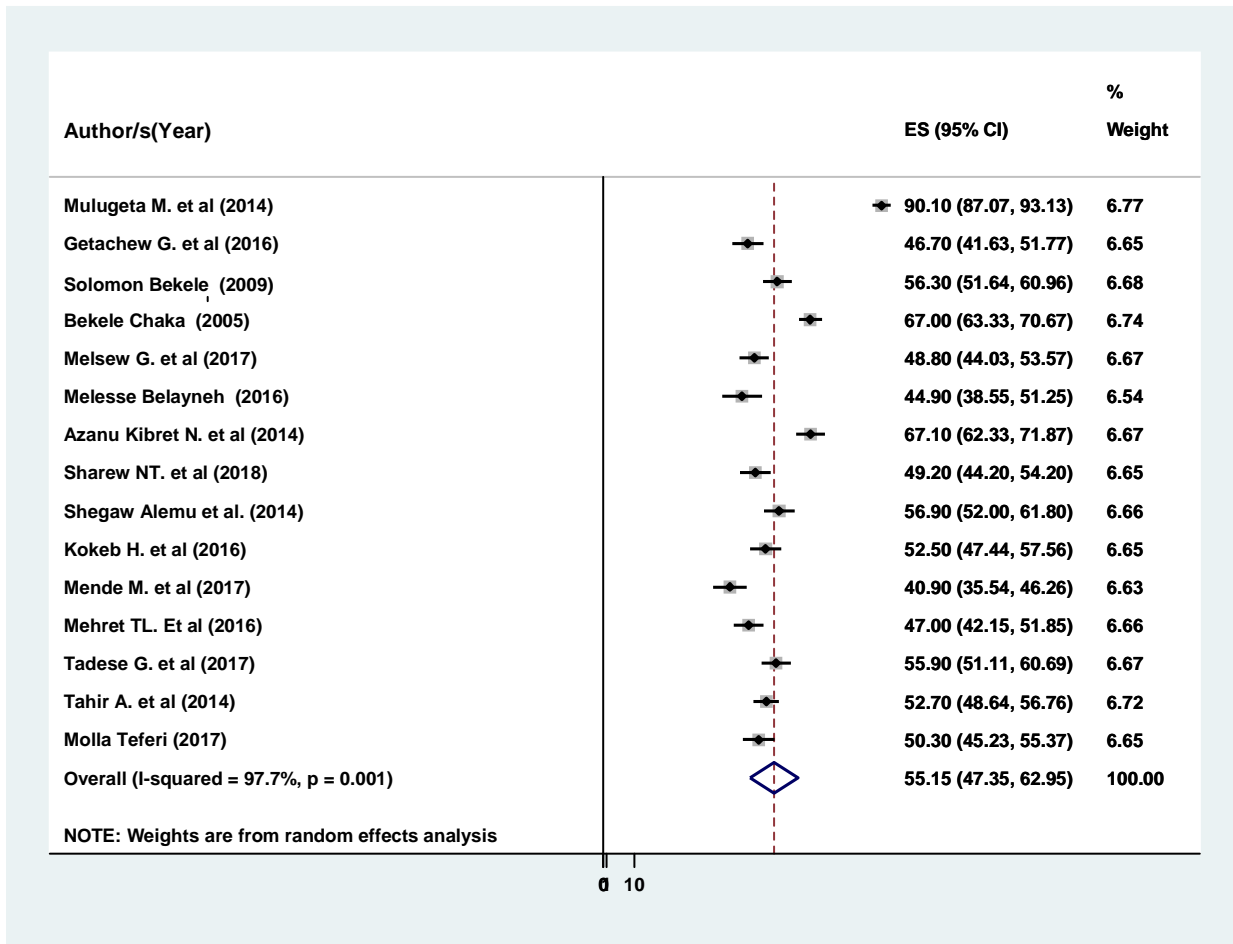


Figure 2: Forest plot showing the pooled proportion of satisfied patient with nursing care

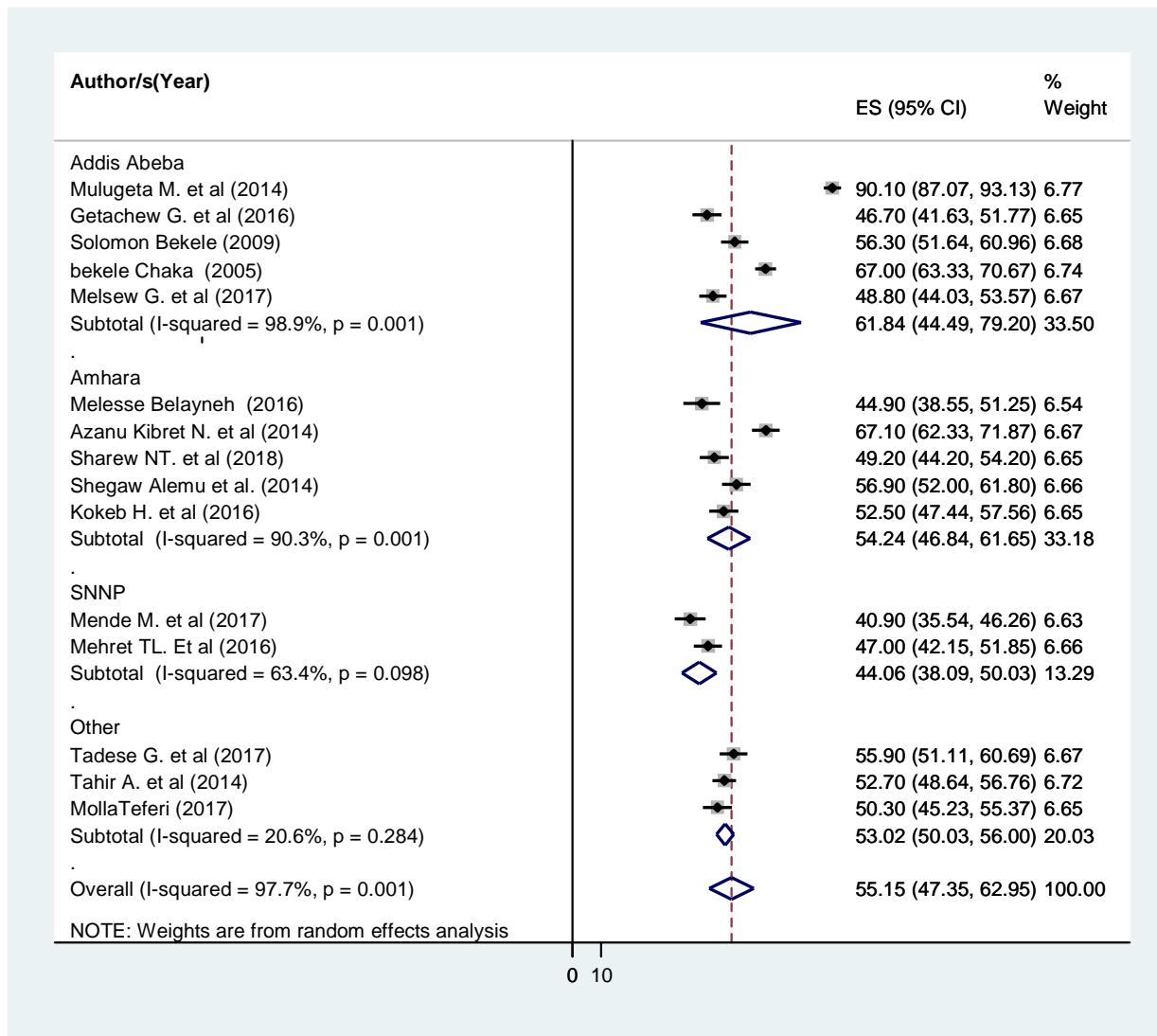
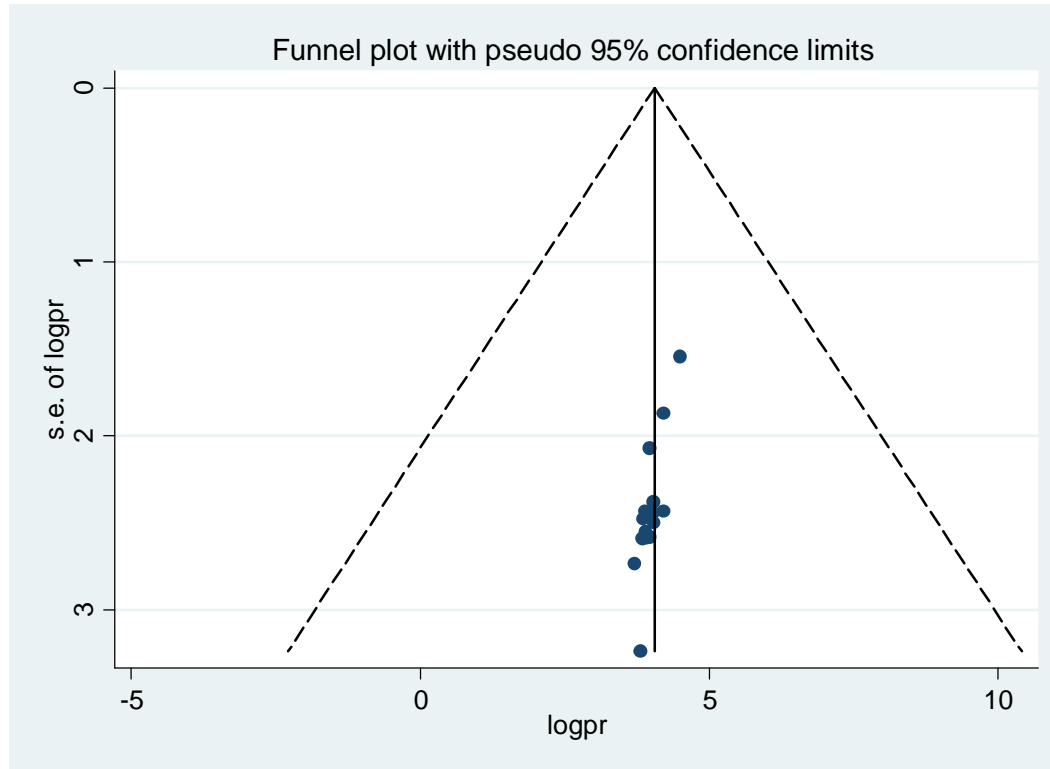
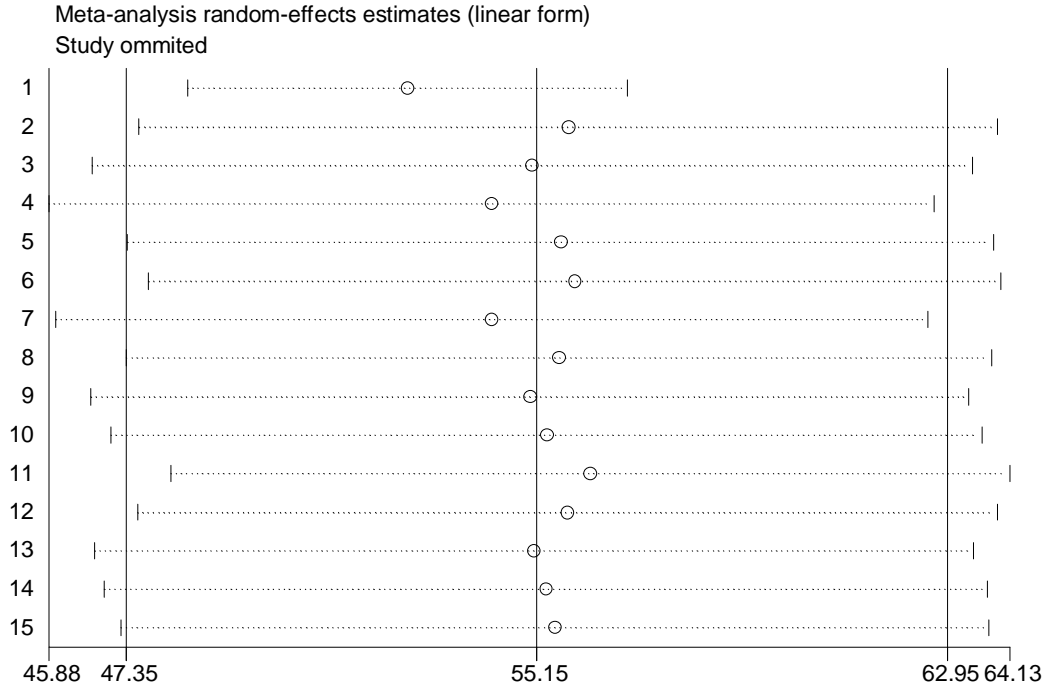


Figure 3: Subgroup analysis by regions on the rate of patient satisfaction with nursing care





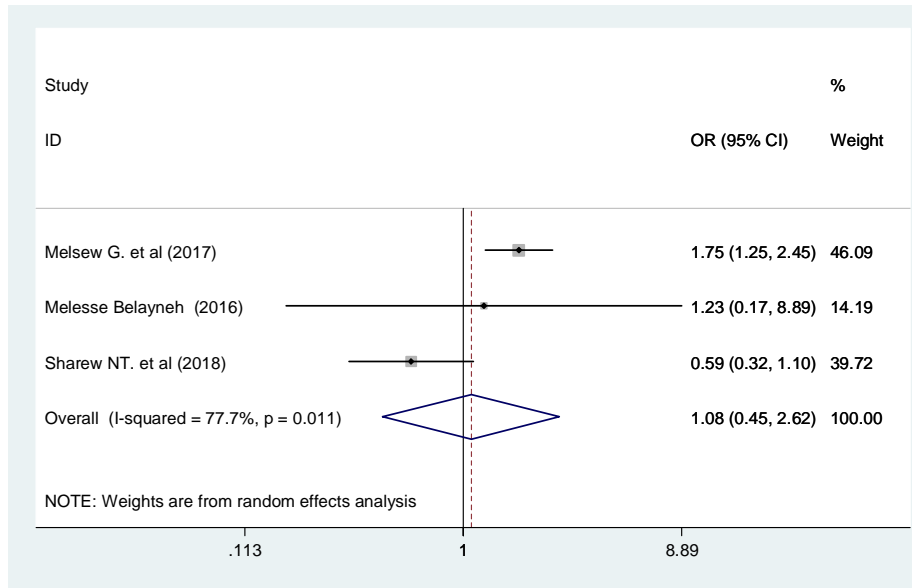


Figure 6: Forest plot showing the association between patient satisfaction and availability of assigned nurse in charge

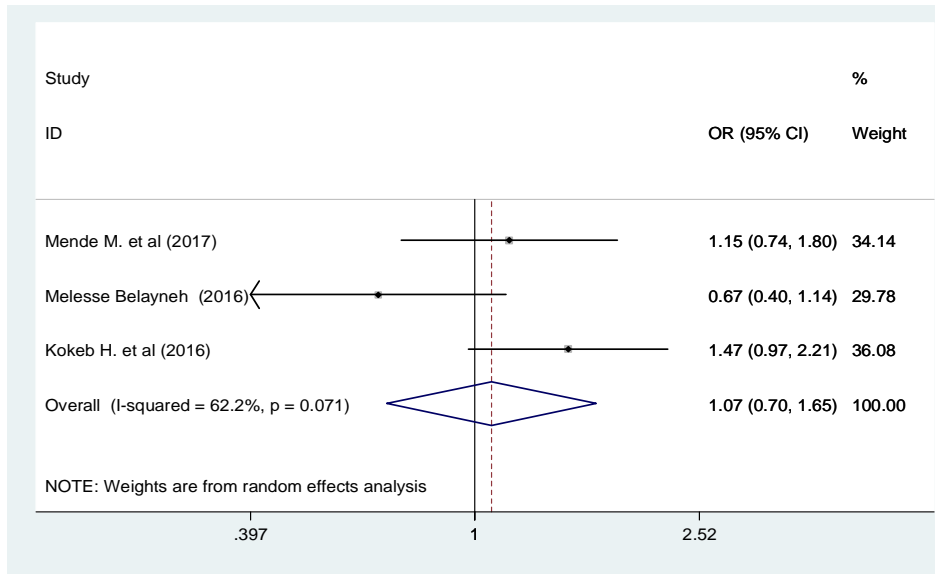


Figure 7: Forest plot showing the association between patient satisfaction and residence

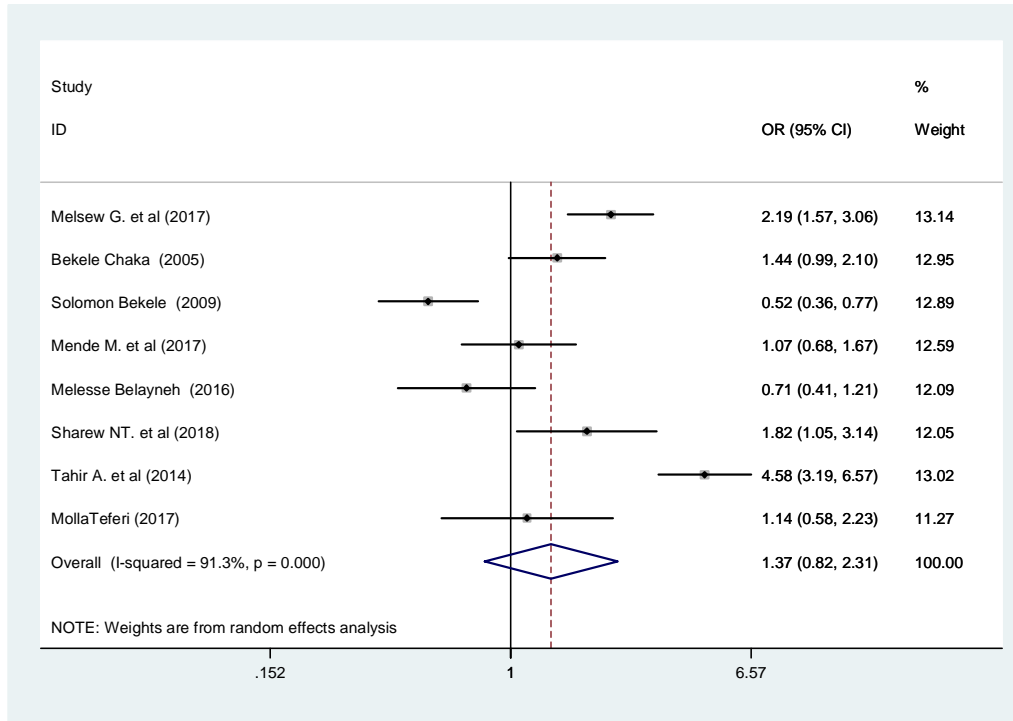


Figure 8: Forest plot showing the association between patient satisfaction and history of admission

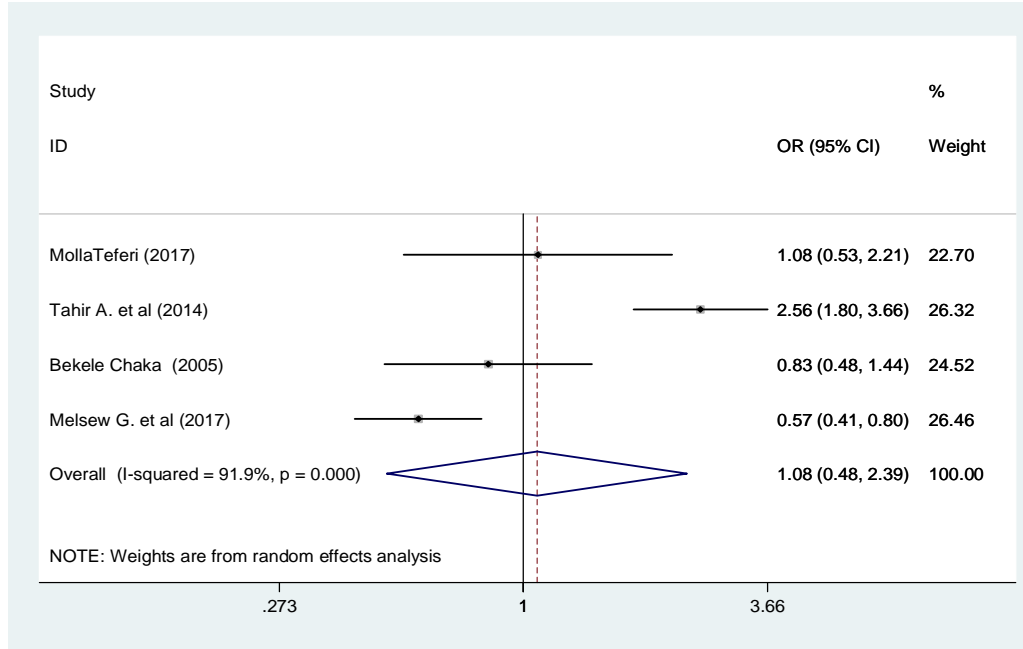


Figure 9: Forest plot showing the association between patient satisfaction and presence of other diseases