PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Atrial Fibrillation Detection using Single Lead Portable Electrocardiographic Monitoring: A Systematic Review and Meta-Analysis.
AUTHORS	Ramkumar, Satish; Nerlekar, Nitesh; D'Souza, Daniel; Pol, Derek; Kalman, Jonathan; Marwick, Thomas

VERSION 1 – REVIEW

REVIEWER	Isabel Elaine Allen University of California, San Francisco, USA
REVIEW RETURNED	26-Jan-2018

GENERAL COMMENTS	Overall this is very well done - I have a couple of suggestions for sensitivity analyses that might strengthen the results and conclusions: 1. There are a number of studies in the meta-analyses that may influence the results (Gunalp, Yadogawa, Manina and a few others) and it would be good to apply a jackknife technique to see how the overall summary results are influenced by these studies. In Stata you can do this with the metaninf command automatically. It leaves out 1 study at a time. Since these outlier studies are all in the same direction, perhaps a meta-analysis omitting all of them at one time would also be useful. 2. Although the meta-regression was well done, I did not see the year of the study included or the results of a cumulative meta-analysis reported. This would also be useful to examine as part of sensitivity analyses.

REVIEWER	Lorenzo Loffredo Sapienza University, Italy
REVIEW RETURNED	07-Feb-2018

GENERAL COMMENTS	In this systematic review Ramkumar et al. want to investigate the atrial fibrilation (AF) detection rate using portable ECG devices compared with Holter monitoring.Interestingly, they found that "Portable ECG devices may offer an efficient screening option for AF compared to 24hour Holter monitoring". The following points must be considered: 1) to reach final conclusions we need studies that evaluate a direct comparison between Holter and portable ECG device. 2) As stated by the Authors, the most important limitations are related to significant heterogeneity among populations, lack of clinical data as CHA2DS2-VASc score, drugs (antiarrhythmic drugs, statins etc), moderate quality of the studies etc. 3) specify whether AF was previously known or unknown.

VERSION 1 – AUTHOR RESPONSE

Response to reviewer 1:

1. There are a number of studies in the meta-analyses that may influence the results (Gunalp, Yadogawa, Manina and a few others) and it would be good to apply a jackknife technique to see how the overall summary results are influenced by these studies. In Stata you can do this with the metaninf command automatically. It leaves out 1 study at a time. Since these outlier studies are all in the same direction, perhaps a meta-analysis omitting all of them at one time would also be useful.

We have analysed the effect of the outlier studies on the overall AF detection rate. Please see table 3 and 4 where we have removed each outlier study (and all of them) and reported the AF detection rate.

2. Although the meta-regression was well done, I did not see the year of the study included or the results of a cumulative meta-analysis reported. This would also be useful to examine as part of sensitivity analyses.

We have included the results of a cumulative meta-analysis (see figure 5). This did not show any significant change in AF detection over time using either Holter or single lead ECG monitors.

Response to reviewer 2:

1) To reach final conclusions we need studies that evaluate a direct comparison between Holter and portable ECG device.

Head to head comparisons between portable ECG devices and Holter monitoring is very important in assessing this question. We have included two studies in our analysis which have used both screening options in a head to head study (Doliwa et.al. and Hendrikx et. al.). Given the paucity of studies comparing both screening technologies, we have attempted to compare the overall AF detection rate of individual studies. We feel that more head-to-head trials are required to compare both monitoring technologies.

2) As stated by the Authors, the most important limitations are related to significant heterogeneity among populations, lack of clinical data as CHA2DS2-VASc score, drugs (antiarrhythmic drugs, statins etc), moderate quality of the studies etc.

This is an important limitation in our analysis and a weakness of most of the studies included in the meta-analysis. The patient populations are different between individual studies and there is poor reporting of the CHA_2DS_2-VASC score. This is reflected by the significant heterogeneity observed in the meta-analysis. We have addressed these limitations in our discussion section (under the limitations heading).

3) Specify whether AF was previously known or unknown.

We have reported the proportion of patients with a known history of AF in the individual studies selected for the meta-analysis (see table 2). Our analysis was focussed on newly diagnosed AF, so we only included patients with a new diagnosis of AF.

VERSION 2 – REVIEW

REVIEWER	Isabel Elaine Allen

	University of California, San Francisco
REVIEW RETURNED	20-Jun-2018

GENERAL COMMENTS	this revision answers all the statistical issues from the earlier review

REVIEWER	Lorenzo Loffredo Sapienza University
REVIEW RETURNED	25-Jun-2018

GENERAL COMMENTS	The Authors have adequately addressed all my previous concerns/suggestions. No further comment.