ESC European Society of Cardiology
European Heart Journal - Quality of Care and Clinical Outcomes (2020) **6**, 340
doi:10.1093/ehjqcco/qcaa028

Comparison of long-term mortality between patients living alone vs. patients living with others with acute coronary syndrome treated with percutaneous coronary intervention: reply

THE AUTHORS REPLY: We appreciate the interest of Dr Hanif and colleagues in our article.[1] Our study aimed to determine whether living alone is an independent prognostic risk factor for long-term mortality in patients with acute coronary syndrome (ACS) who were treated with percutaneous coronary intervention (PCI). We intended that our article would be provocative and initiate some discussion in that regard.

Previous studies have reported that living alone patients had a significantly longer onset-to-presentation time compared with the not living alone patients.[2] Furthermore, Clare *et al.* reported that among male patients with acute myocardial infarction, being married was associated with significantly earlier presentation for care.[3] As the author mentioned, a delay in reperfusion in the living alone patient group can result in poor clinical outcomes.

Among the younger population (<65 years) in present study, patients in the living alone group were more likely to be undergone PCI before and had a higher incidence of ST elevation myocardial infarction (STEMI). Left ventricular ejection fraction (LVEF) at discharge was significantly lower in the living alone group. In contrast, among the older population (≥65 years), patients in the living alone group were significantly older and had a higher prevalence of female, taking statins at discharge, as well as higher total cholesterol, and high-density lipoprotein cholesterol levels. They were also more likely to be employed.

As the authors pointed out, the participants were largely male in the all and younger patient cohorts of the present study. On the other hand, there was a significantly higher percentage of female patients in the living alone group among the older patient cohort. Christensen *et al.*[4] reported that living alone was a predictor of cardiac events only in males. We were also concerned that gender differences might be a possible reason why living alone was not associated with clinical outcomes among the older population.

We hypothesize that living alone is a multifaceted component. As authors commented, living alone might be associated with a greater amount of regular physical activity. However, sufficient secondary prevention might not be achieved in the living alone patients because of poor compliance and financial problems. As the present study did not record detailed information regarding activities of daily living or income, we were unable to determine whether there was an association between these socioeconomic factors and clinical outcomes.

There were some limitations in our study, as we mentioned, and as the author pointed out. However, the present study clearly showed a significant association between living alone and all-cause death in younger patients with ACS who were treated with primary PCI. The number of living alone patients have been increasing in recent years, and this group requires careful follow-up in the long term. We hoped that our article would provide some clues to improving their outcomes.

Conflict of interest: none declared.

References

1. Takeuchi M, Ogita M, Wada H, Takahashi D, Nozaki Y, Nishio R et al. Comparison of long-term mortality between living alone patients vs. living together patients with acute coronary syndrome treated with percutaneous coronary intervention. *Eur Heart J - Qual Care Clin Outcomes* 2020.
2. Nakatsuma K, Shiomi H, Watanabe H, Morimoto T, Taniguchi T, Toyota T et al. Comparison of long-term mortality after acute myocardial infarction treated by percutaneous coronary intervention in patients living alone versus not living alone at the time of hospitalization. *Am J Cardiol* 2014; **114**:522–527.
3. Atzema CL, Austin PC, Huynh T, Hassan A, Chiu M, Wang JT et al. Effect of marriage on duration of chest pain associated with acute myocardial infarction before seeking care. *Can Med Assoc J* 2011; **183**:1482–1491.
4. Christensen AV, Juel K, Ekholm O, Thrysøe L, Thorup CB, Borregaard B et al. Significantly increased risk of all-cause mortality among cardiac patients feeling lonely. *Heart* 2020;**106**:140–146.

Mitsuhiro Takeuchi, Manabu Ogita*, Hideki Wada, Daigo Takahashi, Yui Nozaki, Ryota Nishio, Kentaro Yasuda, Norihito Takahashi, Taketo Sonoda, Shoichiro Yatsu, Jun Shitara, Shuta Tsuboi, Tomotaka Dohi, Satoru Suwa, Katsumi Miyauchi, and Hiroyuki Daida

*Corresponding author. Tel: +81 55 948 3111, Fax: +81 55 947 2648, Email: m-ogita@sa2.so-net.ne.jp