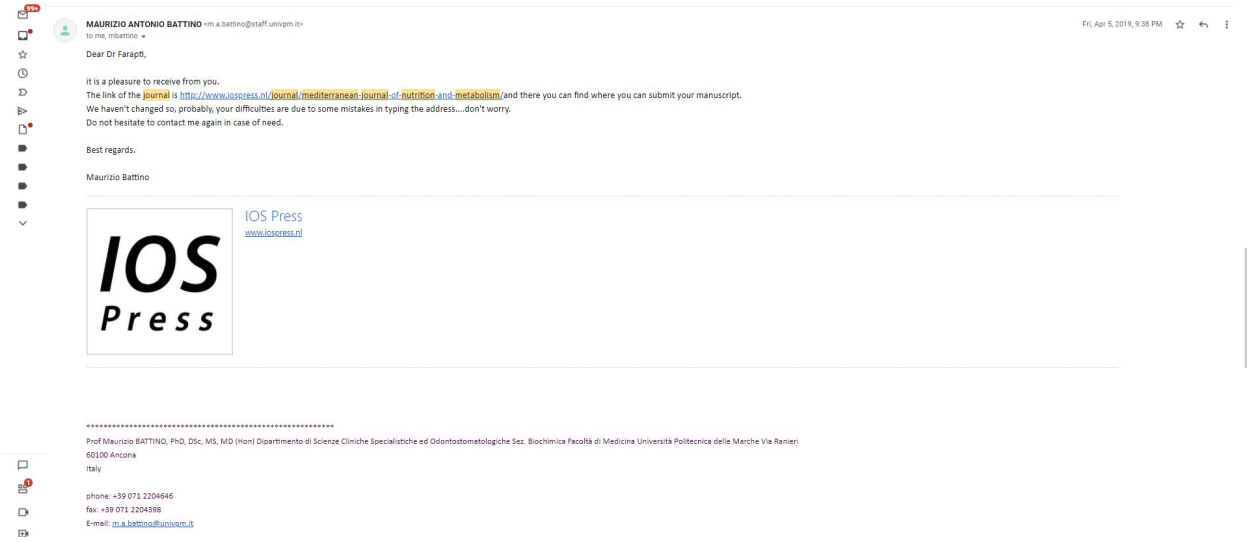
BUKTI SEBAGAI CORRESPONDING AUTHOR

1. Judul Artikel: Urinary and dietary sodium to potassium ratio as the useful marker for estimating blood pressure among older women in Indonesian urban coastal



MAURIZIO ANTONIO BATTINO <m.a.battino@staff.univpm.it>
to me, mbattino

Fri, Apr 5, 2019, 9:38 PM

Dear Dr Farapti,

it is a pleasure to receive from you.
The link of the journal is http://www.iospress.nl/journal/mediterranean-journal-of-nutrition-and-metabolism/and there you can find where you can submit your manuscript.
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Best regards.

Maurizio Battino

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Prof Maurizio BATTINO, PhD, DSc, MS, MD (Hon) Dipartimento di Scienze Cliniche Specialistiche ed Odontostomatologiche Sez. Biochimica Facoltà di Medicina Università Politecnica delle Marche Via Ranieri
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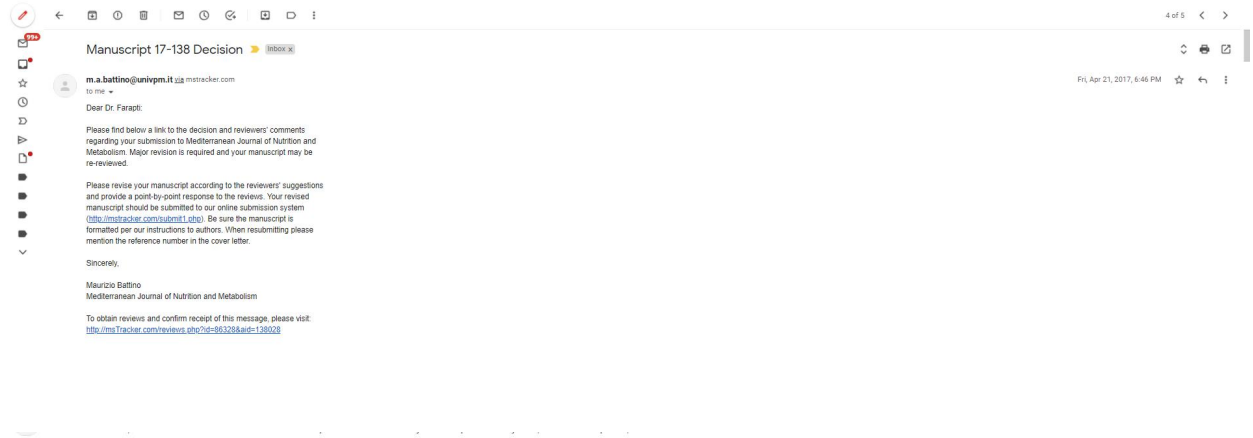

Manuscript 17-138 Decision

m.a.battino@univpm.it via mstracker.com
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Fri, Apr 21, 2017, 6:46 PM

Dear Dr. Farapti:

Please find below a link to the decision and reviewers' comments regarding your submission to Mediterranean Journal of Nutrition and Metabolism. Major revision is required and your manuscript may be re-reviewed.

Please revise your manuscript according to the reviewers' suggestions and provide a point-by-point response to the reviews. Your revised manuscript should be submitted to our online submission system (http://mstracker.com/submit1.php). Be sure the manuscript is formatted per our instructions to authors. When resubmitting please mention the reference number in the cover letter.

Sincerely,

Maurizio Battino
Mediterranean Journal of Nutrition and Metabolism

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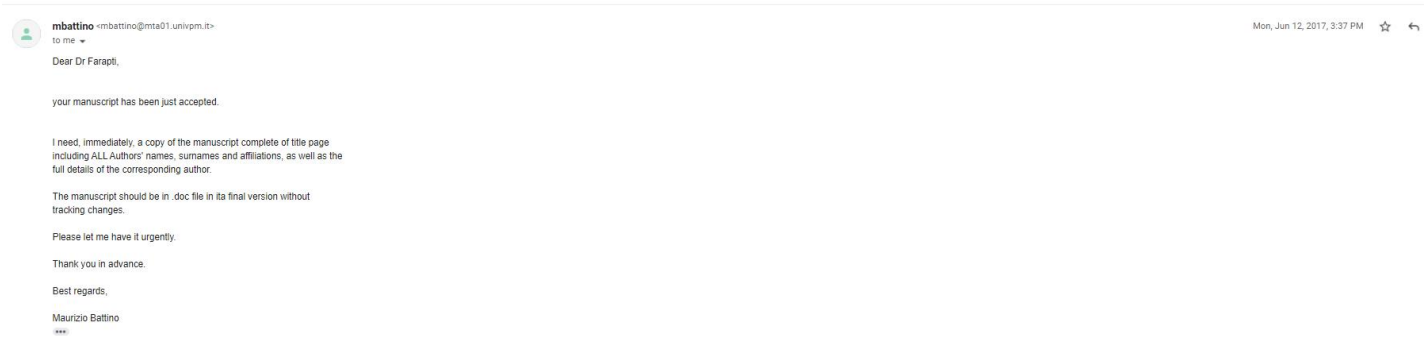

mbattino <mbattino@mta01.univpm.it>
to me

Mon, Jun 12, 2017, 3:37 PM

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your manuscript has been just accepted.

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The manuscript should be in .doc file in ita final version without tracking changes.

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Thank you in advance.

Best regards,

Maurizio Battino

1028672: Your article has been published

Inbox x

Monica Nabil Tawfik <monica.nabil@hindawi.com> Thu, Apr 4, 2019, 5:16 PM
to me

Dear Dr. Farapti,

I am pleased to let you know that your article has been published in its final form in "Journal of Nutrition and Metabolism."

Farapti Farapti, "Highlighting of Urinary Sodium and Potassium among Indonesian Schoolchildren Aged 9–12 Years: The Contribution of School Food," Journal of Nutrition and Metabolism, vol. 2019, Article ID 1028672, 9 pages, 2019. https://doi.org/10.1155/2019/1028672.

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Inbox x

Vijayalakshmi Manivasakan <Vijayalakshmi.Manivasakan@hindawi.com> Sun, Feb 23, 2020, 12:17 PM
to me

Dear Dr. Farapti,

I am pleased to let you know that your article has been published in its final form in "Journal of Nutrition and Metabolism."

Farapti Farapti, "Awareness of Salt Intake among Community-Dwelling Elderly at Coastal Area: The Role of Public Health Access Program," Journal of Nutrition and Metabolism, vol. 2020, Article ID 8793869, 7 pages, 2020. https://doi.org/10.1155/2020/8793869.

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Best regards,

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Urinary And Dietary Sodium to Potassium Ratio As The Useful Marker For Estimating Blood Pressure Among Older Women In Indonesian Urban Coastal

Abstract

Background: Risk factors for hypertension (HT) are age, high sodium (Na) intake, and low potassium (K) intake, as well as the geographical location of a region such us coastal area. Calculation of~~with~~ the sodium-to-potassium (Na/K) ratio was more strongly associated with blood pressure (BP) than either Na or K alone. Dietary recalls and urine analyses are the most feasible methods for estimating electrolyte intake.

Objective: This study aims to analyze the association between both urinary and dietary (Na/K) ratio and BP among older women residing at urban coastal in Indonesia

Methods: The cross-sectional study involved 51 older women aged ≥ 45 y post menopause in urban coastal dwellers. A single 24-h urine collection and food recall 2x24h were used to assess sodium and potassium intake.

Results: Of the 51 subjects mean age 56.98±5.7 years completed the study, 37.3% of subjects were classified as hypertensive. The mean of urinary and dietary Na/K ratio were 5.28±1.68 and 1.12±0.74 respectively. Urinary Na/K ratio was independently associated with systolic BP [SBP], meanwhile, the association between dietary Na/K ratio and both SBP and DBP showed significant correlation only in the unadjusted model.

Conclusion: Na/K ratio is a useful marker for estimating SBP and assessing populations at high risk for HT~~hypertension~~. The slightly low Na and substantially low K intake might cause the Na/K ratio become high enough to induce HT. Since the prevalence of HT is high enough~~first shown~~, studies in this field may provide clues for the further

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Comment [B2]: what does this phrase mean "Since HT is first shown,…"?

understanding of its causes and getting effectively ways to decrease Na/K ratio in urban coastal dwellers.

Key words: Sodium, potassium, blood pressure, urban coastal, hypertension

INTRODUCTION

A raised blood pressure (BP) is the most common and preventable risk factors for cardiovascular disease both in Western and Asian populations; population living in urban areas have the prevalence of hypertension (HT) 2-3 times higher than in rural areas [1,2].The prevalence of HT in developing countries was 32.3%, it means about 1 in 3 adults in thoses area is hypertensive [3]. Reducing the burden disease associated with HT has become as a global public health priority and a major public health challenge [1]. Indonesian National Health Survey 2013 reported that 26.5% of the Indonesian adult population have established HT, furthermore, most of (63.2%) HT cases in society were not yet diagnosed [4].

Comment [B3]: 2-3 times

Risk factors for HT include age, high intake of sodium (Na), and low intake of potassium (K), as well as the geographical location of a region [5-8]. Epidemiological study described that female gender, older age, and HT increase the sensitivity to dietary sodium intervention. [9]. The association with older age raises concerns about hormonal problems in elderly, which could increase the risk of HT [9]. Moreover, the INTERSALT (International Study of Electrolyte Excretion and Blood Pressure) study reported stronger associations between Na/K ratio and blood pressure with increasing age [10].

Comment [B4]: references should be added.

Most populations around the world consume less than the recommended intake of K, unfavourably high Na intakes remain prevalent around the world. High Na and low K together had a pivotal role in the pathogenesis of HT [11]. Population studies have

reported significant correlation between Na intake and BP, and so have K intake. [8,10]. Furthermore, a systematic review have revealed that the sodium to potassium [Na/K] ratio was more strongly associated with HT and BP than either Na or K alone [12].

Comment [B5]: references should be added.

Several methods were applied by population studies to assess Na and K intake. Urine analyses and dietary recalls are the most feasible methods for estimating electrolyte intake [12-14]. The measurement of 24-hour urinary Na and K excretion is the 'gold standard' and highly reliable method for obtaining data of these intakes in population since it reflects more than 90% of Na and K intake. On the other hand, dietary method is easier to perform and more convenience thought-less reliable [15,16].

Studies on Na and K intake using 24-hour urine collection in the healthy population have been applied by many countries in the worldwide [16], although~~t~~ most studies still applied dietary methods to know sodium and potassium intake in society [17]. Several studies demonstrated that region had a significant interaction with the risk of HT [5,6,8,18]. Moreover, *Du et al.*reported the interaction between the region of residence and Na/K ratio are~~is~~ significant [18].

Community~~-~~ ~~-~~dwelling in coastal area has a high risk of HT. The tradition of salting and drying fish to preserve fish by coastal communities was a custom and their occupational every day. The high amount of salt used for salting fish can increase the Na intake in these populations and have an undesirable effect on BP [7,19,20]. On the other hand, low K intake in urban dwellers was inverse association with BP [8,21].

Indonesia is an archipelagic country, with high prevalence of HT [4]. Many communities (about 60% of Indonesian people) reside in coastal region [22]. Measuring sodium and potassium intake by 24-hour urinary method at the urban coastal resident in Indonesia is challenging and have never been done. The analysis of relationship between

Na/K ratio and BP often uses only one method. This study aims to analyse the association between Na/K ratio and BP among older women residing at urban coastal in Indonesia, using two methods single urinary 24-h and dietary food recall 2x24-hours, and furthermore to assess whether those methods are applicable to identify populations at high risk for HT in this community.

SUBJECTS AND METHODS

Study Subjects

Our study assumed that older women related to menopause, so we included healthy old adult women aged ≥ 45 years old and post menopause as participants, although~~t~~ most area use ≥ 60 years to refer to the older population. Since almost of older person in urban coastal in Kenjeran Surabaya (central city of east Java, Indonesia) followed programme of community health care facilitated by government, data was collected on two selected places from five elderly community health care in urban coastal area in Surabaya with cluster random sampling method and subjects recruitment by consecutive sampling. Because of completeness of urine collection, we recruited all respondents in two places (135 respondents following the strict screening stage) and finally, ~~F~~for one year study (2015), fifty-~~-~~one subjects ~~who~~ met the study criteria ~~were obtained from 135 **subjects** following the strict screening stage.~~

We recruited only female because most of (88%) participants participating actively at community health care in that place were female. Moreover, there was the difficulty of collecting urinary 24h in men since they generally worked outside the home (mostly as fishermen). Participants were included in the study if they were post-menopause, permanent resident in coastal area for more than 10 years, and willing to

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collect a 24-hours urine sample. Participants with cognitive impairment (mini mental state examination score < 24), kidney dysfunction (creatinine clearance test (< 60 mL/min), consuming tobacco and alcohol, and inaccurate urine collection were excluded.

The present study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures were approved by the Ethics Committee of the Faculty of Public Health, Universitas Airlangga, and written informed consent was obtained from all subjects

Study Measurements

Data collection in this study including structure questionnaire, food recall 2x24 hours, anthropometric measurements, a 24-hours single urine sample, and a blood sample was obtained from all subjects. A structured questionnaire was fulfilled by participants. Body weight, height, and BP were measured. At the end of the first visit, all participants were given plastic bottles complete with~~to~~ written and verbal instructions for a single 24-hours urine collection measured. The sample urine was brought by the researcher to ISO 9001 certificated laboratory to be measured of urinary sodium, potassium, and creatinine. Sodium and potassium were analyz~~s~~ed by ion-selective electrodes method which responds relatively specifically to ions both anions and cations [23]. Creatinine determination in biological fluids was carried out by Jaff~~r~~e's reaction [24]. Participants were also asked to recall their dietary intake over the previous 2x24 hours.

Anthropometric data

Weight and height were measured by a trained investigator using calibrated electronic scale. Weight and height, to calculate Body Mass Index (BMI), were measured without

shoes and heavy clothes. All data were collected following norms set out by the WHO. BMI was computed as the ratio of weight (kg) per square height (m^2).

Physical Activity

Physical activity of subjects was obtained by interview and the physical activity point ~~index~~ was calculated by multiplication score of intensity, duration, and frequency from the questionnaire.~~of physical activity the subjects, and~~ It was categorized ~~by~~ below the average if total score ~~of physical activity index~~ was less than 40 point [25].

Blood Pressure

Blood pressure was measured o~~i~~n the right arm of seated participants following a 5 min rest period, using standard calibrated mercury sphygmomanometers with regular adult cuffs by trained nurse. Three times measurements were obtained with participants and the average of three readings was used for the analysis. Hypertension was defined by "JNC 7" as a systolic BP (SBP) ≥140 mm Hg or a diastolic BP (DBP) ≥90 mm Hg, or a self-report of taking antihypertensive medication or previously diagnosed by a physician.

Dietary sodium (Na) and potassium (K)

Dietary Na and K were assessed by food recall 2x24 hours and performed after the day of urine collection. Subjects were requested to maintain their normal eating habits during the survey period. The nutritionist asked the subjects to recall all foods and beverage consumed in the previous 2x24h. One day of 24-h dietary recalls was~~ere~~ selected randomly from Monday to Sunday in each individual ~~community~~, and another day when the day of urinary collection. To clear the portion size, nutritionists demonstrated food models and the photographic manual of household measures. The food recall was analyzed using Nutrition Data System (Nutrisurvey) and reported as mg/day.

Urinary 24h

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Comment [B8]: Lines 129-135, the process of dietary assessment is unclear. How were the two days selected for each individual? If one of the two days was the day of the urinary collection, how was the assessment completed? How was the assessment conducted for the other day, by whom and how? How was the assessment analyzed by what database?

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All participants were given written and verbal instructions how to collect 24-hour urine correctly. The first urine of the day was discarded, and all urine over the following 24 hours, including the first urine of the following day, was collected in the bottles provided. When the subjects returned the urine bottles to researchers the following day, they were asked to confirm the accuracy of their 24h urine collection by asking whether any collection of urine was lost or forgotten and total volume of the collection was measured, Completeness of collection was determined by the subject's records and the output of creatinine in the 24-hours urine. Inaccurate urine collections defined as either a 24-hour urinary volume <500 mL or a urinary creatinine < 5.0 mmol/day or extreme outliers for urinary creatinine > 3 SD from the mean were excluded [26]. In those cases in which the collection of 24 h urine sample had to be repeated, further meetings were planned. So, each participant who meets study criteria but had inaccurate urine collections can be included again become subject by collecting urinary 24h correctly.

Urinary and Dietary Na/K ratio

Urinary sodium concentration and potassium concentration were analyzsed and expressed as millimoles per litrer. Urinary Na/K was calculated by dividing urinary Na by K. Similar to urinary Na/K ratio, dietary Na/K ratio was expressed as milligram per day was calculated by dividing dietary Na by K.

Statistical Analysis

All data were checked for normality using the Kolmogorov Smirnov test. Sample characteristics were compared between HT status using t test or Mann Whitney test for continuous data (Table 1). Bivariate analysis to assess the correlation between Na, K, Na/K ratio and SBP/ DBP was performed by Pearson or Spearman test (Table 2). Multivariable robust liniaer regression models were used to evaluate the association of

BP (dependent variable) with urinary and dietary Na/K ratio (independent variable) after adjustment for age, length of stay, BMI, and dietary Na/K ratio (for analysis urinary Na/K) or urinary Na/K ratio (for analysis dietary Na/K). To commit the potential effect of antihypertensive medication, sensitivity analyses with the exclusion of subjects consuming these medications were performed (Table 3). All statistical calculations were performed with Statistical Package for Social Science version 21 with a p-value <0.05 was significant.

RESULTS

A total of 51 subjects completed the study. They averaged 56.98±5.7 years of age, had a BMI of 25.96±4.85 kg/m^2. Almost all subjects lived in the coastal area since birth, so the mean residence was almost similar to mean age (52.8±12.57) years. From 51 subjects with BP measurements, 19 subjects (37.3%) were classified as hypertensive. Among those with HT, 15 subjects were taking antihypertensive drugs regularly. All subjects have participated actively in elderly community health programme since for five years ago.

Comment [B9]: "since five years ago" is vague.

The mean ± SD urinary Na of all subjects was 104.75±59.25 mmol/d, urinary K was 20.52±9.72 mmol/d, and urinary Na/K ratio was 5.28±1.68. The Ddietary method showed that the mean Na intake was 1247.8±764.17 mg/d, dietary K was 1220.09±955.8 mg/d, and dietary Na/K ratio 1.12±0.74. Based on hypertensive status, the mean urinary and dietary Na/K ratio in hypertensive subjects wereas higher significantly than normotensive subjects with p=0.015 and p=0.011 respectively. Baseline characteristics stratified by hypertensive status are summarized in Table 1.

Table 1 is here

Bivariate correlation between sodium, potassium, and blood pressure

The analysis of bivariate correlation using Pearson or Spearman test demonstrated either Na or K alone in urinary and dietary did not correlate significantly with BP. However~~Meanwhile~~ urinary and dietary Na/K ratio correlated significantly with SBP ~~only~~ (Table 2)

Table 2 is here

The association of urinary and dietary Na/K ratio with Blood Pressure

Urinary Na/K ratio was independently associated with SBP. In the unadjusted model [model 1], SBP increased by 3.99 [95% CI:1.18, 6.81]; p=0.006] for each 1-unit increase in urinary Na/K. This association remained significant event after adjustment for age, length of stay, BMI, dietary Na/K ratio (for analysis urinary Na/K) or urinary Na/K ratio (for analysis dietary Na/K), SBP increased by 3.89 [95% CI 1.18,6.6] for each 1-unit increase in urinary Na/K (model 2). Furthermore, urinary Na/K ratio was changed 4.89 with significance by excluding subject with antihypertensive medicine. In other hands, the association between urinary Na/K and DBP reported that no significant correlation both for the unadjusted model and adjusted model.

The association between dietary Na/K ratio and SBP/DBP showed that significant correlation only in the unadjusted model. However, it became not significantly in model 2 and model 3. Furthermore, associated with SBP in the univariate model, dietary Na/K increased almost twice than those in urinary Na/K. There were 7.79 (95% CI 1.29, 14.3) versus 3.99 (95% CI 1.18, 6.81).

Table 3 is here

Comment [B10]: table 2 shows that the association between Na/K ratio and SBP also met the significance criteria but this seems to be ignored by the authors in both results and discussion.

Comment [B11]: the number of subjects excluded due to antihypertensive medicine should be included in the methods, results and table.

DISCUSSION

The present findings indicate that two methods both dietary and urinary Na/K ratio were correlated with SBP in older women in the urban coastal area. Moreover, findings in our study corroborate a systematic review of population studies that Na/K ratio was more strongly associated with HT and/or systolic and diastolic BP outcomes than either Na or K alone [12]. Our study also reported that either Na or K alone in both urinary and dietary did not correlate significantly with BP ($p>0.05$). Some studies which applicable Na/K ratio more strongly associated with BP than Na and/ or K alone were Mente *et al* [6], Hu *et al* [27], Yamori *et al* [28], Ruixing *et al* [29], Huggins *et al* [26], Schroder *et al* [30], and Xie *et al* [31] studies.

Population studies that investigated the association between urinary Na and K and blood pressure in multiple countries are INTERSALT ~~(International Study of Electrolyte Excretion and Blood Pressure)~~ [10], PURE (Prospective Urban Rural Epidemiology) study [6], and INTERMAP (The International Study of Macro/Micronutrients and Blood Pressure) [26]. Among many countries involved in those studies, Indonesia is not included and there are limit~~t~~ed studies about urinary 24h Na and K intake in Indonesia. Recent study showed among all countries in Southeast Asia until 2013, only Singapore used the gold standard 24-hr urinary Na excretion to estimate intakes [13].

We used two instruments to measure Na and K intake; single urinary 24h and food recall 2x24h. Urinary excretions of Na and K are considered to adequately reflect the dietary intakes of these electrolytes, meanwhile, dietary Na and K often were reported underestimate or overestimate [13,16]. However dietary recalls and urine analyses are often the most feasible methods for estimating Na and K intake [13,14]. Our study demonstrated Na intake from dietary method was less than urinary, otherwise, K intake

from dietary method was greater than urinary (table 1). The Trial of Non-pharmacologic Intervention in the Elderly (TONE) study showed a similar result with our study; dietary recalls yielded estimates of Na and K intake that respectively averaged 22% less and 16% greater than those from urine assays [13]. However, our study differs from the previous study showing that Na intake measured by the dietary method is larger than 24-hour urinary method [14].

The mean of urinary Na/K ratio and dietary Na/K ratio in our study were 5.28±1.68 and 1.12±0.74 respectively and categorized as a high value since dietary guidelines demonstrated the normal range of dietary Na/K ratio was either 0.49 or 0.32 [32]. Most studies using dietary methods to assess Na/K ratio also showed high value of Na/K ratio were Hu *et al* with the Na/K ratio of 3.34 [27]; Ruixing et al of 1.8 [29]; Schroder et al of 0.62 [30]; Bu et al of 2 [33]; and Zhang of 1.41 [34]. Meanwhile, several studies applied 24-hours urine collection to assess Na/K ratio in adults [12]. There were Du *et al* with the Na/K ratio of 4.9-2.8 [18]; Mirzaei *et al* of 3.69±1.58 [21]; Millen *et al* of 1.41 [35]; Michel *et al* of 3.71 [36]; Huggins *et al* of 1.99 [26]; Redelinghuys *et al* of 4.27 [37]; Yamori *et al* of 4.55 [28]; Xie *et al* of 6.1 [31]; Ortega *et al* of 2.57 [38]; and Tran *et al* of 2.44 [5].

The mean of sodium intake based on 24-h urinary excretion in our subjects was 104.75±59.25 mmol/d. These averages were considerably lower than those reported in many populations in the world. Our result was surprising since the most adult populations have the mean Na intakes >100 mmol/day, and for many Asian countries, the mean intakes are >200 mmol/day [39]. Low sodium intake in our study may be explained by age, education, and energy intake of our subjects. Some countries from epidemiological studies demonstrated that low Na intake presented in women > 50 years

old, subjects with lower educated and low energy intakes [39,40]. Furthermore, a coastal area in our study was located in the urban central city so the accessibility of health information and health care could be achieved easily. Following actively in health programme, our subjects might change their behaviour by decreasing of salt intake on their food.

Mean dietary intakes of potassium in our subjects were 1220.09±955.8 mg/day and only 20.52±9.72 mg/d based on urinary 24j. It means very low or only 17-25% to compared Recommended Dietary Allowaence (RDA). One causes of low potassium intake wereas the low intake of vegetables and fruits. Analysis fruit and vegetables from data Indonesian National Health Survey 2010 among adult female showed the mean of consuming fruit and vegetables was 139.7±55.9 g/d which were lower than World Health Organization 400 g/d [41]. Moreover, recent study showed low consumption of fruit and vegetable contributed to low potassium intake [42].

The slightly low sodium and substantially low potassium intake in urban coastal dwellers might cause the Na/K ratio among our subjects become high enough to induce HT. It was revealed that both the mean urinary and dietary Na/K ratios in hypertensive subjects were higher significantly than normotensive subjects (table 1). Moreover, urinary and dietary Na/K ratio correlated significantly with SBP (table 2). There were similar to Hedayati *et al* study at 3303 Dallas heart study age 30-60 years old showed that urinary Na/K ratio in hypertensive subjects was higher than normotensive [43]. Furthermore, INTERSALT study in 40 centerres in the worldwide also revealed the relation of urinary Na/ K ratio to SBP was highly significant ($p<0.001$) [10].

The superiority of this study is we used 24h urinary to measure Na and K intake because there are limitted studies by measuring 24h urinary Na and K in Indonesia

[6,10,17,26]. Furthermore, this study applied Na/K ratio for assessing dietary and estimating blood pressure at the population level and the previous studies revealed that Na/K ratio is a useful marker for nutrition surveillance in populations and can identify populations at high risk for nutrition-related chronic disease [10,44]

~~Otherwise,~~ T~~t~~he weakness of our study is about the units of Na/K ratio. For additional note, the units of Na/K differ depending on the measurement method (mg vs mmol), so it may be difficult to compare and to examine the same methods with different units [~~36~~44]. The assessing of Na and K intake by recent intake and single 24-h urine cannot be regarded to adequately reflect long-~~-~~term dietary exposure. Multiple 24-~~-~~hour urine samples collected over a period of several months would yield a better estimate of habitual intake [12,37]. The results of our stu~~3~~dy can not be applied to the general population, but generalized only in the population with spec~~s~~ific characteristics such as only older women with post menopause dwelling at urban coastal area.

In conclu~~s~~sion, this study supports the view that Na/K ratio is a useful marker for estimating BP since Na/K ratio is more strongly associated with blood pressure than either sodium or potassium alone. Both urinary and dietary Na/K ratios are potential surveillance tool that can assess and identify populations at high risk for HT in coastal area; assessing by urinary Na/K ratio is more recommended. The slightly low sodium and substantially low potassium intake in urban coastal dwellers might cause the Na/K ratio become high enough to induce HT. Studies in this scope may propose clues for a further understanding of its causes and be getting effective~~ly~~ ways to decrease Na/K ratio in our population.

ACKNOWLEDGMENTS

The authors would like to express our sincere appreciation to the participants of this study. The authors also wish to thank ~~to~~ Faculty of Public Health, Universitas Airlangga, for giving a funding support in this research

CONFLICT OF INTEREST

The author[s] confirm that this article content has no conflict of interest.

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Tabel 1. Baseline characteristics stratified by hypertensive status[1]

Variable	Total [n=51]	Normotensive n=32	Hypertensive n=19	*p*
Age [years]	56.98±5.7	57.19±6.85	57.16±3.45	0.98
Long time of residence [years]	52.8±12.57	56.59±7.16	56.53±3.34	0.96
SBP [mm Hg]	132.25±17.78	121.09±9.89	151.05±10.75	0.00*
DBP [mm Hg]	83.63±10.3	77.03±6.33	94.74±4.24	0.00*
BMI [kg/m^2]	25.96±4.85	24.26±5.24	28.82±1.36	0.001*
Physical activity index	21.45±4.86	22.06±4.81	20.42±4.89	0.25
	S			
Urinary 24h				
Volume [ml]	837.25±330.13	818.75±279.9	868.42±407.6	0.61
sodium [mmol/d]	104.75±59.25	94.59±41.13	120.53±81.03	0.21
potassium [mmol/d]	20.52±9.72	21.19±10.18	19.50±9.08	0.57
Urinary Na/K ratio [mmol/mmol]	5.28±1.68	4.74±1.36	6.01±1.89	0.015*
clearance creatinine [ml/mnt]	94.06±22.86	90.88±2.11	99.42±24.38	0.2
Dietary intake				
Fluid consumption [ml]	1400.91±343.61	1377.71±348.33	1439.98±341.23	0.537
Energy [kkal/d]	1374.63±303.13	1374.91±261.82	1374.16±370.38	0.993
sodium [mg/d]	1247.8±764.17	1091.23±747.6	1511.49±736.59	0.057
Potassium [mg/d]	1220.09±955.8	1300.92±680.61	1083.96±391.11	0.211
Dietary Na/K ratio [mg/mg]	1.12±0.74	0.89±0.55	1.5±0.87	0.011*

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463 ***** Hypertensive subjects significantly different than normotensive subjects. significant. p <0.05.

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Table 2 Bivariate analysis: Correlation between sodium. potassium and blood pressure

Variable	Systolic BP	Diastolic BP

	r	*p*	r	*p*
Urinary 24h				
Sodium	-0.053	0.713	-0.118	0.41
Potassium	-0.184	0.195	-0.153	0.283
Na/K ratio	0.377	0.006*	0.263	0.062
Dietary intake				
Sodium	0.196	0.169	0.16	0.27
Potassium	- 0.19	0.182	-0.184	0.196
Na/K ratio	0.278	0.048*	0.232	0.101

* Pearson correlation. significant. $p < 0.05$

Table 3. Robust linier regression to show the association of BP [dependent variable] with urinary and dietray Na/K ratio [independent variable]

		Systolic BP		Diastolic BP	
Independent variable†	N	Change [95% CI]	P value	Change [95% CI]	P value
Urinary Na/K ratio					
Model 1		3.99[1.18-6.81]†	0.006*	1.48[-0.223-3.19]	0.087
Model 2		3.89[1.18-6.6]	0.006*	1.28 [-0.37-2.93]	0.125
Model 3		4.89[1.93-7.84]	0.002*	1.72[-0.189-3.63]	0.076
Dietary Na/K ratio					
Model 1		7.79[1.29-14.3]	0.020*	4.39[0.614-8.17]	0.024*
Model 2		4.25[-2.25-10.74]	0.195	2.26[-1.69-6.22]	0.256
Model 3		3.28[-0.38-2.14]	0.309	1.76[-2.43-5.94]	0.397

Model 1: Univariate model.

Model 2: Multivariate model adjusted for age. long time of residence. BMI. and dietary Na/K ratio [for analysis urinary Na/K] or urinary Na/K ratio [for analysis dietary Na/K]

Model 3: Model 2 with sensitivity analysis excluding subjects consuming antihypertensive medication

(the number of subjects using antihypertensive medicine is 15 subjects)

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† Unit for change in BP is expressed as the percentage per each 1-unit change in the urinary and dietary Na/K ratio.

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DECISION LETTER

Please find below a link to the decision and reviewers' comments regarding your submission to Mediterranean Journal of Nutrition and Metabolism. Major revision is required and your manuscript may be re-reviewed.

Please revise your manuscript according to the reviewers' suggestions and provide a point-by-point response to the reviews. Your revised manuscript should be submitted to our online submission system (http://mstracker.com/submit1.php). Be sure the manuscript is formatted per our instructions to authors. When resubmitting please mention the reference number in the cover letter.

Sincerely,

Maurizio Battino
Mediterranean Journal of Nutrition and Metabolism

REVIEWER 1

This manuscript describes the result of a small cross-sectional study examining the association between urinary and dietary sodium to potassium ratio with blood pressure among older women in an Indonesian urban coastal area. As the authors also stated in the discussion, this study mainly corroborated findings of previous studies. There are many concerns regarding the preparation of the manuscript. They are listed below.

1. The authors are strong encouraged to have their manuscript reviewed by professional English editor(s). There are many grammatical errors or unclear sentences throughout the manuscript.
2. Line 7, more than what?
3. Line 21, what does this phrase mean "Since HT is first shown,…"?
4. Line 29, 2-3 "times"?
5. Line 37-38, 45-46, references should be added.
6. Lines 84-86. The process of recruitment is unclear. Were there 135 subjects responded and 51 met the criteria?
7. Lines 119-121, the method of how physical activity "point" was derived should be included.
8. Lines 129-135, the process of dietary assessment is unclear. How were the two days selected for each individual? If one of the two days was the day of the urinary collection, how was the assessment completed? How was the assessment conducted for the other day, by whom and how? How was the assessment analyzed by what database?
9. Line 173, "since five years ago" is vague.
10. Lines 183-186, table 2 shows that the association between Na/K ratio and SBP also met the significance criteria but this seems to be ignored by the authors in both results and discussion.
11. Lines 195, the number of subjects excluded due to antihypertensive medicine should be included in the methods, results and table.

REVIEWER 2

The manuscript "Urinary And Dietary Sodium to Potassium Ratio As

The Useful Marker For Estimating Blood Pressure Among Older Women In Indonesian Urban Coastal" analysed the association between Na/K ratio and blood pressure among older women residing at urban coastal in Indonesia. The manuscript is interesting but in some points the concepts are not clear and an enhancement is necessary. In addition, the work presents some flaws that need to be corrected before being considered for publication in this journal or any other journal.

- first of all, the use of English needs improvement; there are numerous grammatical and spelling mistakes present in the text. The authors should consult a native English speaker during the revision of the manuscript.
- please, **check the abbreviations used in the text. The abbreviations need to be defined in parentheses the first time they appear in the text.**
- the authors declared that "Population studies have reported significant correlation between Na intake and BP, and so have K intake". Please add some references in order to justify it.
- please clarify in the appropriate paragraph, **how the recruitment process was performed.**
- please check **the material and methods section.** In some point the sentences are not clear and could be difficult to understand by the reader.
- please, present the references according to the instruction provided by the journal.

Reviewer 1' comments	Author comments
The authors are strong encouraged to have their manuscript reviewed by professional English editor(s). There are many grammatical errors or unclear sentences throughout the manuscript	Authors had contacted a profesional english editor and finally we had corrected many grammatical errors or unclear sentences throughout the manuscript There is the correction: line 7 : preposition with → of line 49 : unfavourably→ unfavorably line 62&86: althought → although line 113 : preposition to → with line 116&162: analysed → analyzed line 118 : Jaffre → jafre line 163 : milimol per litre → milimoles per liter line 171 : linier → linaer line 191 : was---were line 232 : limitted → limited line 268 : behavoiur → behavior line 272 : Allowaence→allowance line 285 : centres → centeres adding some preposition the/a in front of noun
Line 7, more than what?	Authors had completed the sentence "....more strongly associated with blood pressure (BP) **than either Na or K alone**"
Line 21, what does this	Authors had clarify the sentence

phrase mean "Since HT is first shown,…"?	"Since the prevalence of HT is high enough....." And to explain clearly the sentence, in the first sentence of result, authors had added sentence "of the 51 subjects mean age 56.98±5.7 years completed the study, 37.3% of subjects were classified as hypertensive"
Line 29, 2-3 "times"?	Authors had added word "time" in line 33 So the sentence ".....the prevalence of hypertension (HT) 2-3 times higher than in rural areas....."
Line 37-38, 45-46, references should be added	Line 37-38 ---- Now line 41-43 and authors had added the references no 9 Line 45-46 ---- Now line 50-52 and authors had added the references no8 and 10
Lines 84-86. The process of recruitment is unclear. Were there 135 subjects responded and 51 met the criteria?	Now, the process of recruitment is clear in line 88-94 There is the explanation Data was collected on two selected places from five elderly community health care in urban coastal area in Surabaya with cluster random sampling method and subjects recruitment by consecutive sampling. Because of completeness of urine collection, many subjects did not meet the inclussion criteria, so we recruired all respondents in two places (135 **respondents** following the strict screening stage) and finally, fifty-one subjects met the study criteria The participant flow: Five elderly community health care in urban coastal area in Surabaya ↓ cluster random sampling method Two selected places (n=135) ↓ consecutive sampling Subjects (n=51)
Lines 119-121, the method of how physical activity "point" was derived should be included.	Authors had completed the methods of physical activity in line 127-130 Physical activity of subjects was obtained by interview and the physical activity point calculated by multiplication score of intensity, duration, and frequency from the questionnaire. It was categorized below the average if total score was less than 40 point
Lines 129-135, the process of dietary assessment is unclear. How were the two days	Authors had clarified the statement about dietary assessment in the first paragraf in line 137-138 "Dietary Na and K were assessed by food recall 2x24 hours and performed after the day of urine collection"

selected for each individual? If one of the two days was the day of the urinary collection, how was the assessment completed? How was the assessment conducted for the other day, by whom and how? How was the assessment analyzed by what database?	The explanation is: For almost subjects, dietary recall process was performed in the morning when the subjects returned the urine bottles to researchers the following day and dietary recall was only performed among subjects that confirm the accuracy of their 24h urine collection. By whom the dietary accessment? In the third sentence, author had written "The nutritionist asked the subjects to recall all foods and beverage consumed in the previous 2x24h" How was the assessment analyzed by what database? Authors had added in line 145-146 "The food recall was analyzed using Nutrition Data System (Nutrisurvey)and reported as mg/d"
Line 173, "since five years ago" is vague.	Authors had changed the sentence in line 185-186 For five years
Lines 183-186, table 2 shows that the association between Na/K ratio and SBP also met the significance criteria but this seems to be ignored by the authors in both results and discussion.	In the sentence, authors want to show the opposite result that using Na/K ratio showed the significant value, but using Na or K alone was not significant. But the sentence seems to be ignored So to clarify the sentence, authors revised and replaced word "meanwhile" become "however" in the result line 196-199 "The analysis of bivariate correlation using Pearson or Spearman test demonstrated either Na or K alone in urinary and dietary did not correlate significantly with BP. **However** urinary and dietary Na/K ratio correlated significantly with SBP only" In the discussion, in line 281-282 authors added the sentence "Moreover, urinary and dietary Na/K ratio correlated significantly with SBP (table 2)"
Lines 195, the number of subjects excluded due to antihypertensive medicine should be included in the methods, results and table	Authors had given the information in the methods (line 134-136 and line 173-175) Line 135-137: "Hypertension was defined..... or a self-report of taking antihypertensive medication....." Line 174-176: "To commit the potential effect ..... the exclusion of subjects consuming these medications were performed (Table 3). Authors also had given the information in the results (line 183-184) "Among those with HT, 15 subjects were taking antihypertensive drugs regularly" Authors had added the information in the table 3 "The number of subjects using antihypertensive

	Medicine was 15 subjects”

Reviewer 2’ comments	Author comments
first of all, the use of English needs improvement; there are numerous grammatical and spelling mistakes present in the text. The authors should consult a native English speaker during the revision of the manuscript.	Authors had contacted a profesional english editor and finally we had corrected many grammatical errors or unclear sentences throughout the manuscript There is the correction: line 7 : preposition with → of line 49 : unfavourably→ unfavorably line 62&86: althought → although line 113 : preposition to → with line 116&162: analysed → analyzed line 118 : Jaffre → jafre line 163 : milimol per litre → milimoles per liter line 171 : linier → linaer line 191 : was---were line 232 : limitted → limited line 268 : behavoiur → behavior line 272 : Allowaence→ allowance line 285 : centres → centeres adding some preposition the/a in front of noun
please, **check the abbreviations used in the text. The abbreviations need to be defined in parentheses the first time they appear in the text.**	Authors added parentheses of intersalt in line 45 INTERSALT (International Study of Electrolyte Excretion and Blood Pressure) And authors deleted the parentheses of intersalt in line 227 because it had written in the previous sentence
the authors declared that "Population studies have reported significant correlation between Na intake and BP, and so have K intake". Please add some references in order to justify it.	authors had added the references no.8 and 10 in the sentence (in line 50-52)
please clarify in the appropriate paragraph, **how the recruitment**	Now, the process of recruitment is clear in line 88-94

process was performed.	There is the explanation Data was collected on two selected places from five elderly community health care in urban coastal area in Surabaya with cluster random sampling method and subjects recruitment by consecutive sampling. Because of completeness of urine collection, many subjects did not meet the inclussion criteria, so we recruired all respondents in two places (135 **respondents** following the strict screening stage) and finally, fifty-one subjects met the study criteria The participant flow: Five elderly community health care in urban coastal area in Surabaya ↓ cluster random sampling method Two selected places (n=135) ↓ consecutive sampling Subjects (n=51)
please check **the material and methods section.** In some point the sentences are not clear and could be difficult to understand by the reader.	Authors checked and clarified the material and methods section particulary explanation about physical activity and dietary assessment Authors had completed the methods of physical activity in line 127-130 Physical activity of subjects was obtained by interview and the physical activity point calculated by multiplication score of intensity, duration, and frequency from the questionnaire. It was categorized below the average if total score was less than 40 point Authors had clarified the statement about dietary assessment in the first paragraf in line 137-138 "Dietary Na and K were assessed by food recall 2x24 hours and performed after the day of urine collection" And authors had added the sentence in line 145-146 "The food recall was analyzed using Nutrition Data System (Nutrisurvey)and reported as mg/d"
please, present the references according to the instruction provided by the journal.	Authors corrected the reference according to the instruction provided by the journal.