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Clinical-behavioral factors associated with overweight in young adults students

Fatores clínico-comportamentais associados ao excesso ponderal em adultos jovens estudantes

Factores clínico-conductuales asociados al exceso ponderal en adultos jóvenes estudiantes

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ABSTRACT
Objective: to identify clinical-behavioral factors associated with overweight in young adult students. **Methods:** a cross-sectional study was conducted with 560 young adults from 26 schools in a state capital in northeast Brazil. After obtaining the data by applying specific questionnaires, multiple logistic regression was used to identify the factors associated with overweight. **Results:** overweight affected more than a third of the young adult students and, in bivariate analysis, showed statistically significant associations with the variables: weight in childhood, weight in adolescence, family history of overweight, use of obesogenic drugs and exposure to alcohol. The variables retained in the final regression model were: weight in adolescence, family history of overweight and alcohol exposure. **Conclusion:** frequency of overweight was high, and a history of weight gain in adolescence, family history of overweight and exposure to alcohol explained the problem in question, confirming the relationship of overweight with genetic and behavioral factors.
Descriptors: Overweight; obesity; young adult; schools.

RESUMO
Objetivo: identificar os fatores clínico-comportamentais associados ao excesso ponderal (EP) em adultos jovens estudantes. **Método**: estudo transversal, realizado com 560 adultos jovens de 26 escolas de uma capital do nordeste brasileiro. Após obtenção dos dados pela aplicação de questionários específicos, utilizou-se a regressão logística múltipla para identificação dos fatores associados ao EP. **Resultados**: o EP acometeu mais de um terço dos adultos jovens e, na análise bivariada, apresentou associação estatística significativa com as variáveis: peso na infância, peso na adolescência, história familiar de excesso ponderal, uso de fármacos obesogênicos e exposição ao álcool. No modelo final da regressão, permaneceram as variáveis: peso na adolescência, história familiar de EP e exposição ao álcool. **Conclusão**: a frequência de casos de EP é alta e o histórico de ganho de peso na adolescência, o histórico familiar de EP e a exposição ao álcool explicam o agravo em questão, ratificando a relação do EP com fatores genéticos e comportamentais.
Descritores: Sobrepeso; obesidade; adulto jovem; escolas.

RESUMEN
Objetivo: identificar los factores clínico-conductuales asociados al exceso ponderal (EP) en adultos jóvenes estudiantes. **Método:** estudio transversal, realizado junto a 560 adultos jóvenes de 26 escuelas de una capital del nordeste brasileño. Después de obtener los datos por la aplicación de cuestionarios específicos, se utilizó la regresión logística múltiple para identificación de los factores asociados al EP. **Resultados:** el EP afecta a más de un tercio de los adultos jóvenes y, en el análisis bivariado, presentó asociación estadística significativa con las variables: peso en la infancia, peso en la adolescencia, historia familiar de exceso ponderal, uso de fármacos obesogénicos y exposición al alcohol. En el modelo final de la regresión, permanecieron las variables: peso en la adolescencia y exposición al alcohol. **Conclusión:** la frecuencia de casos de EP es alta y la historia de aumento de peso en la adolescencia, el historial familiar de EP y la exposición al alcohol explican el agravio en cuestión, ratificando la relación del EP con factores genéticos y conductuales.
Descriptores: Sobrepeso; obesidad; adulto joven; escuelas.

INTRODUCTION

The prevalence of excess weight (EW) in the Brazilian adult population increased from 43.2% (2006) to 51.0% (2012), with a mean annual increase of 1.37%. The statistically significant increase in the prevalence of EW was observed in all Brazilian cities, in both genders, in all age groups and at all levels of schooling[1]. In 2017, the frequency of EW was 54.0%, being higher among men (57.3%) than among women (51.2%)[2].

In addition to prevalence data, studies indicate the tendency for the coming years. In 10 years, about two-thirds of the adults in the capitals of the Brazilian states will have EW, which demands an urgent response from the public power and intersectoral articulations to make the environment less obese[1].

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As in the general adult population, obesity and overweight have also intensified among young people of different ages. In the few studies that have addressed young adults in the 20-24 age group, the frequency of cases of EW has already reached one third[2-5].

In addition to the observed gap in studies performed with young adults, it is necessary to carry out research that adds more analysis regarding the factors associated with EW in this population. It is noted studies linking several factors[4-7], and although individual factors such as clinical and behavioral have already been discussed, there is a need for further study, as investigating other components of this dimension is pertinent to broaden the knowledge of EW related mechanisms.

In view of the above, the objective was to identify the clinical-behavioral factors associated with EW in young adult students.

LITERATURE REVIEW

Factors associated with EW in young adults refer to sociodemographic, psychoemotional and clinical-behavioral issues[4-7]. Regarding the sociodemographic, studies identify that the variables marital status and having children are associated with the EW in this age group[6,7], pointing to issues of family routine. The mentioned characteristics can be mixed with others, as in the case of the psycho-emotional aspects, and therefore enhance the EW.

Psychoemotional situations, in addition to influencing EW, can be influenced by it, often leading to distortions in body image. The perception of body weight was also discussed in a process that evaluated stress, social support and symptoms related to depression, since they are potential intervening factors in the outcome of this matter[4].

More specifically, clinical-behavioral factors are the most cited in relation to PE in the general public. It is known that excessive consumption of caloric foods and sedentary lifestyle are important causes of EW, but it can also be mentioned genetics, history of weight gain in life cycles, comorbidities, use of medicines among others[7,8]. However, the discussion with regard to the young adult audience still needs to be clarified, since few variables are studied in the surveys with the target group[5,7]. In addition, research involving clinical-behavioral situations needs to be expanded, since they are at a level of determination closer to the EW.

METHODOLOGY

Cross-sectional study, carried out in schools in a capital city in the northeast of Brazil. For this research, the universe was composed of young adults students of the municipality, from 20 to 24 years, inserted in a regular educational institution or of young people and adults.

For the calculation of the sample, a pilot study was carried out with 30 young adults to determine the prevalence of the EW phenomenon. The prevalence obtained was 37%, value incorporated into the calculation, defined according to the following formula: $n = (z^2_{5\%} \times P \times Q)/e^2$, where: n is the sample; z is the distribution value at the level of significance 5% (1.96); P is the prevalence of the phenomenon (37%); Q (63%) is the complementary percentage of P (Q = 100 - P); e is the sample error (4%). A sample of 560 young adults were selected for convenience and drawn from 26 schools from a municipality in the northeast of Brazil.

Young pregnant women, as well as those who moved in wheelchairs, were excluded due to the impossibility of anthropometric measurements.

After a previous visit to the school and acceptance from the direction to participate in the research, on the day agreed for data collection, the students ratified their consent by reading and signing the Written Informed Consent (WIF) and, shortly thereafter, were invited to a research-driven classroom for privacy assurance. In that room, the relevant procedures for this phase were applied.

Data collection took place from June 2014 to May 2015, in three phases: selection and awareness of schools; implementation of the instrument of data collection and verification of anthropometric measurements.

The following variables were considered: EW: yes [body mass index (BMI) > 25 Kg/m2] / no (BMI < 25 Kg/m2); weight in self-referred childhood: normal / overweight; weight in self-reported adolescence: normal / overweight; family history of overweight (are there cases of overweight in your family?): yes / no; use of obese drugs (have you ever used any medication, if any): yes (use of benzodiazepines or corticosteroids or antipsychotics or antidepressants or antiepileptics or sulphonylureas or insulin or contraceptives) / no; balanced diet (eat a balanced diet): yes (with relative frequency, almost always) / no (almost never, rarely, sometimes); number of meals/day: > 4 meals / <4 meals; sedentary

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lifestyle: yes (> 150 minutes of physical activity / week / no (<150 minutes of physical activity/week) exposure to alcohol: yes (yes regularly; yes, occasionally) / no (rarely, never).

The statistical descriptive measures were initially calculated. In the bivariate analysis, the chi-square test of *Pearson* for categorical variables, considering a level of statistical significance of 5%. To estimate the strength of association of possible markers of EW, it was calculated the *odds ratio* (OR), with a 95% confidence interval.

In multivariate analysis, the procedure for adjustment of potential confounders was multiple logistic regression. For inclusion in the initial model, we adopted p <0.20 obtained in the bivariate analysis. For the next step, p <0.05 was used as the inclusion criterion. The criterion established in this stage of analysis for the variables remained in the model was the *Wald* test had at least one category with statistical significance of p <0.05. The method of data entry in all phases of the regression was forced entry (*enter*).

The data were processed, analyzed and presented in tables. The results were then discussed according to the literature reviewed.

The project of this research was approved by a competent body under protocol number 662.105 / 2014 and, according to the Resolution no. 466/2012[9], it was considered the assumptions of bioethics with submission of the WIC to the participants, which explained and established the commitment to maintain the principles of non-maleficence, beneficence, justice and autonomy to which the research is committed.

RESULTS

The sociodemographic, relational and psychoemotional characteristics were addressed in a previous study[4,6]. Furthermore, from the analysis of the BMI for young adults in school, it was possible to verify normal weight in more than half (58.9%) of them, almost one third with overweight (26.4%) and 9.4% with obesity. However, when the classes considered in the EW were added together, 35.8% of the young people were already in this category.

Regarding the clinical-behavioral aspects, the history of childhood, adolescence and family history of EW were identified in 10.4%, 13.6%, 42.0% of young adults, respectively. Other data observed in the literature were also identified in this study as the use of obesogenic drugs (17.7%), unbalanced diet (78.4%), meal frequency lower than four per day (36.1%), EW (12.3%), alcohol exposure (32.3%) and physical inactivity (21.1%). See Table 1.

In the bivariate analysis, the following variables were found to be statistically significant association with EW (p <0.05): weight in childhood, weight in adolescence, excess weight in the family, use of obesogenic drugs and alcohol exposure. To be included in the adjustment phase of the logistic regression model, the variables would need to present p<0.20. Thus, the same variables were also selected for the multivariate analysis, as shown in Table 1 and 2.

When the variables with p <0.20 were identified, the multivariate analysis was carried out, and only those with p<0.05 were followed, with the following variables remaining: weight in adolescence, EW in the family and exposure to alcohol, as shown in Table 2.

From the final model, we observed the influence of clinical-behavioral variables to explain EW in the study sample.

DISCUSSION

When the matter of the prevalence of EW is observed, the difference of the percentage values found in different regions is clear. In Brazilian studies, in the state of Ceará, the prevalence of EW changed according to the region, being 19.4% in Juazeiro do Norte (Cariri region, Ceará) and 34.5% in Maracanaú (metropolitan region of Fortaleza, Ceará)[3,5]. The current study surpassed such marks, making it clear that in the area closest to the capital, the result was superior to what was found in more distant cities.

Extrapolating these borders, it was found that the Philippines presented a number of young adults with EW about 4 times smaller (8.7%) than the one found in Fortaleza. In this country, regional diversities were also evident, where it was identified that the groups with a high prevalence of EW were centered in the urban nucleus of the Metropolitan Region[10]. This fact points to a difference of habits, customs and social issues in the different regions.

Among other factors, it is identified that there is a relation between the presence of obesity in one or both parents and obesity in the child[8]. In another study, when investigating the history of weight gain in childhood, adolescence and parents, 12% reported childhood EW and 11.8% during adolescence; about a quarter of them stated that parents had a history of weight gain[7].

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TABLE 1: Univariate and bivariate analysis of variables significantly associated with excess weight in young adult students. Fortaleza-Ceará-Brazil, 2015.

Variables	Total	Excess weight		P
		Yes	No	
	f (%)	f (%)	f (%)	
Weight in childhood[1]				
Normal weight	480 (85.7)	162 (33.8)	318 (66.2)	0.001
Overweight	58 (10.4)	32 (55.2)	26 (44.8)	
Weight in adolescence[2]				
Normal weight	477 (85.2)	148 (31.0)	329 (69.0)	0.001
Overweight	76 (13.6)	50 (65.8)	26 (34.2)	
Excess weight in the family				
Yes	235 (42.0)	109 (46.4)	126 (53.6)	0.001
No	325 (58.0)	91 (28.0)	234 (72.0)	
Obesogenic drugs				
No	461 (82.3)	151 (32.8)	310 (67.2)	0.002
Yes	99 (17.7)	49 (49.5)	50 (50.5)	
Balanced diet[3]				
No	439 (78.4)	162 (36.9)	277 (63.1)	0.317
Yes	116 (20.7)	37 (31.9)	79 (68.1)	
No. of meals/day[4]				
$\geq$ 4	341 (60.9)	122 (35.8)	219 (64.2)	0.932
< 4	202 (36.1)	73 (36.1)	129 (63.9)	
Exposure to alcohol[5]				
Yes	181 (32.3)	76 (42.0)	105 (58.0)	0.039
No	358 (63.9)	118 (33.0)	240 (67.0)	
Sedentarism				
Yes	118 (21.1)	41 (34.7)	77 (65.3)	0.805
No	442 (78.9)	159 (36.0)	283 (64.0)	

f: Absolute frequency; p: level of significance of the chi-square test of *Pearson*. OR: *odds ratio*; CI: confidence interval. 1: 22 *missing*; 2: 7 *missing*; 3: 5 *missing*; 4: 17 *missing*; 5: 21 *missing.*

Young adults are at risk for obesity or even gaining excess weight in the transition from childhood or adolescence to adulthood[11,12]. The most critical periods for the development of obesity are in early childhood, during the strong oscillation in the trajectory of body adiposity, which occurs between five and seven years and in adolescence.

In a similar study, it was verified that the weight gain in childhood was statistically associated in the bivariate analysis, but did not remain in the multivariate model[7]. Regarding the weight gain in adolescence, it presented statistical significance in the bivariate analysis and when tested in the multivariate model, remained in the final model ($p < 0.001$).

It is worth noting that the association of high prevalence of EW with external and/or behavioral factors is approximately 95%, with only 5% of cases associated with genetic or neuroendocrine factors[13].

Despite this, the Brazilian Guidelines for the Treatment of Obesity specify that the risk of obesity when neither parent is obese is 9%, but this percentage increases to 50% when one of the parents is obese and reaches 80% when both are obese[8]. The strong relations between the EW of parents and their children has often been verified in previous studies[14,15].

In addition to the factors discussed, exposure to alcohol also remained associated with EW. It is observed that alcohol consumption has spread among the groups of adults and young people, being common its use in collective environments. In the study group, it was not different, since the young ones were also exposed to alcohol. Higher percentages for alcohol intake were also detected in another study with young adults: 76.1% of young adults consumed alcoholic beverages, with an initial mean age of 15.58 (+ 2.70) years[5]. In another study, it was added that, after adjustment for the confounding variables, the variables of perception of stress, alcohol consumption and physical activity remained associated with overweight[16].

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TABLE 2: Regression models for predictors of excess weight in young adult students. Fortaleza-Ceará-Brazil, 2015.

Variables	Gross OR (IC 95%)	Adjusted OR 1 (IC 95%)	Adjusted OR 2 (IC 95%)
Weight in childhood			
Normal weight	0.41 (0.24-0.72)	0.83 (0.42-1.63)	-
Overweight	1	1	-
Weight in adolescence			
Normal weight	0.23 (0.14-0.39)	0.46 (0.25-0.85)	0.27 (0.16-0.46)
Overweight	1	1	1
Excess weight in the family			
Yes	2.22 (1.56-3.17)	1.54 (1.02-2.33)	1.60 (1.08-2.35)
No	1	1	1
Obesogenic drugs			
No	0.50 (0.32-0.77)	0.61 (0.36-1.03)	-
Yes	1	1	-
Balanced diet			
No	1.25 (0.81-1.93)	-	-
Yes	1	-	-
No. of meals/day			
≥ 4	0.98 (0.69-1.41)	-	-
< 4	1	-	-
Exposure to alcohol			
Yes	1.47 (1.02-2.13)	1.76 (1.15-2.67)	1.84 (1.27-2.69)
No	1	1	1
Sedentarism			
Yes	0.95 (0.62-1.45)	-	-
No	1	-	-

OR (CI 95%): *odds ratio* (confidence interval at 95%); 1: Initial model; 2: Final model; R^2= 0.12. X^2 of the model= 46.62, $p \leq 0.001$.

In addition to the above, concerns about body weight increase the risk of excessive alcohol consumption. In a study of body image with overweight people, participants pointed out that the culture of thinness is a condition imposed as an essential issue for the person to be accepted successfully in the Community[17]. The perception of EW generates bodily dissatisfaction in young adults in school, a relevant point to be presented since this profile can put the youth in a process of vulnerability in the context of the consumption of alcoholic beverages[18].

The results become relevant for the planning of health care, since life habits and genetic factors are mainly responsible for the manifestation of specific types of chronic diseases[19]. It is also important to emphasize the importance of professional training considering that many professionals do not work on basic topics such as health promotion and healthy eating[20].

CONCLUSION

It is concluded that the frequency of cases of EW is high and that the history of weight gain in adolescence and the family history of EW explain the problem under discussion, confirming the relation of EW with genetic and behavioral factors. Thus, it is confirmed that the multifactoriality must be identified and discussed in new studies to better clarify this phenomenon in young people.

Although there is concordance with the evidences of this study, the factors associated with EW in the young population still need to be investigated, since their determinants are many and different. It should be remembered that the transversal character of this study limits causal inferences, suggesting longitudinal investigations.

REFERENCES

1. Malta DC, Andrade SC, Claro RM, Bernal RTI, Monteiro CA. Trends in prevalence of overweight and obesity in adults in 26 Brazilian state capitals and the Federal District from 2006 to 2012. Rev. bras. epidemiol. [Internet]. 2014 [cited 2018 Sep 12]; 17(Suppl 1):267-76. DOI: http://dx.doi.org/10.1590/1809-4503201400050021.
2. Ministério da Saúde (Br). Secretaria de Vigilância em Saúde. Vigitel Brasil 2017: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico: estimativas sobre frequência e distribuição sociodemográfica de fatores de risco e proteção para doenças crônicas nas capitais dos 26 estados brasileiros e no Distrito Federal em 2017. Brasília (DF): Ministério da Saúde; 2018.

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3. Carvalho IS, Moreira TMM, Silva DB, Florêncio RS, Rodrigues MTP, Santiago JCS. Prevenção de cronicidades: análise do risco cardiovascular em escolares adultos jovens de um município do Nordeste brasileiro. In: Gomes ILV, Pinto FJM, Figueiredo SV, organizadores. Temáticas de dissertações no âmbito da saúde pública: concepção de orientadores e estudantes. Fortaleza (CE): EdUECE; 2014. p. 309-32.
4. Florêncio RS, Moreira TMM, Silva MRF, Almeida ILS. Overweight in young adult students: the vulnerability of a distorted self-perception of body image. Rev. bras. enferm. [Internet]. 2016 [cited 2018 Sep 12]; 69(2):258-65. DOI: http://dx.doi.org/10.1590/0034-7167.2016690208i.
5. Gomes EB, Moreira TMM, Pereira HCV, Sales IB, Lima FET, Freitas CHA et al. Cardiovascular risk factors in young adults of a city of the Brazilian Northeastern. Rev. bras. enferm. [Internet]. 2012 [cited 2018 Sep 12]; 65(4):594-600. DOI: http://dx.doi.org/10.1590/S0034-71672012000400007.
6. Florêncio RS, Santiago JCS, Moreira TMM, Freitas TC. Excessive weight and sociodemographic vulnerability markers in young adult students. Acta Paul. Enferm. [Internet]. 2016 [cited 2018 Sep 12]; 29(4):413-20. DOI: http://dx.doi.org/10.1590/1982-0194201600057.
7. Santiago JCS, Moreira TMM, Florêncio RS. Association between overweight and characteristics of young adult students: support for nursing care. Rev. latinoam. enferm. (Online). 2015 [cited 2018 Sep 12]; 23(2):250-8. DOI: http://dx.doi.org/10.1590/0104-1169.0174.2549.
8. Associação Brasileira para o Estudo da Obesidade e da Síndrome Metabólica. Diretrizes brasileiras de obesidade 2016. 4ª ed. São Paulo: ABESO; 2016. [cited 2018 Apr10] Available from: http://www.abeso.org.br/uploads/downloads/92/57fccc403e5da.pdf.
9. Ministério da Saúde (Br). Conselho Nacional de Saúde. Resolução n. 466/12. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Brasília (DF): Conselho Nacional de Saúde; 2012.
10. Dahly DL, Gordon-Larsen P, Emch M, Borja J, Adair LS. The spatial distribution of overweight and obesity among a birth cohort of young adult Filipinos (Cebu Philippines, 2005): an application of the Kulldorff spatial scan statistic. Nutr. Diabetes. [Internet]. 2013 [cited 2018 Sep 12]; 3(7): e80. DOI: http://doi.org/10.1038/nutd.2013.21.
11. Gordon-Larsen P, The NS, Adair LS. Longitudinal trends in obesity in the United States from adolescence to the third decade of life. Obesity [Internet]. 2010 [cited 2018 Sep 12]; 18(9):1801-4. DOI: http://doi.org/10.1038/oby.2009.451.
12. Yannakoulia M, Panagiotakos D, Pitsavos C, Lentzas Y, Chrysohoou C, Skoumas I et al. Public Health Nutr. [Internet]. 2009 [cited 2018 Sep 12]; 12(1):36-43. DOI: http://doi.org/10.1017/S1368980008001900.
13. Carvalho EAA, Simão MTJ, Fonseca MC, Andrade RG, Ferreira MSG, Silva AF et al. Obesidade: Aspectos epidemiológicos e prevenção. Rev Med de Minas Gerais [Internet]. 2013 [citado em 12 set 2018]; 23(1):2238-3182. Available from: http://ftp.medicina.ufmg.br/observaped/artigos_obesidade/ARTIGO_OBESIDADE_PUBLICADO_OFICIAL_24_09_2013.pdf.
14. Fernandes RA, Casonatto J, Christofaro DGD, Cucato GG, Oliveira AR, Freitas Júnior IF. Family factors associated with abdominal obesity in adolescentes. Rev. Bras. Saude Mater. Infant. [Internet]. 2009 [cited 2018 Sep 14]; 9(4):451-7. DOI: http://dx.doi.org/10.1590/S1519-38292009000400010.
15. Suñé FR, Dias-da-Costa JS, Olinto MTA, Pattussi MP. Prevalence of overweight and obesity and associated factors among schoolchildren in a southern Brazilian city. Cad. Saúde Pública (Online). 2007 [cited 2018 Sep 14]; 23(6):1361-71. DOI: http://dx.doi.org/10.1590/S0102-311X2007000600011.
16. Petribú MMV, Tassitano RM, Nascimento WMF, Santos EMC, Cabral PC. Factors associated with overweight and obesity among public high school students of the city of Caruaru, Northeast Brazil. Rev. paul. pediatr. [Internet]. 2011 [cited 2018 Sep 14]; 29(4):536-45. DOI: http://dx.doi.org/10.1590/S0103-05822011000400011.
17. Macedo TTS, Portela PP, Palamira CS, Mussi FC. Obese people's perception of their own bodies. Esc. Anna Nery Rev. Enferm. [Internet]. 2015 [cited 2018 Sep 14]; 19(3):505-10. DOI: http://dx.doi.org/10.5935/1414-8145.20150067.
18. Florêncio RS, Oliveira A, Santiago J, Ribeiro D, Almeida I, Pessoa V et al. Body and health perception for obesity in young adults. International Archives of Medicine [Internet]. 2018 [cited 2018 Sep 14]; 11(15):1-7. DOI: http://dx.doi.org/10.3823/2556.
19. Baggio M, Erdmann A, Higaski G, Koerich C, Lanzoni G. Discovery of cardiovascular disease: associating causes and experiencing the context of a referral hospital. Rev. enferm. UERJ. [Internet]. 2016 [cited 2018 Sep 14]; 24(4):e7952. DOI: https://doi.org/10.12957/reuerj.2016.7952.
20. Pedraza D, Menezes T, Costa G. Food and nutrition actions in the family health strategy: structure and work process. Rev. enferm. UERJ. [Internet]. 2016 [cited 2018 Sep 14]; 24(4): e15848. DOI: https://doi.org/10.12957/reuerj.2016.15848.