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A STUDY ON NUTRITIONAL SUPPLEMENTS AND QUALITY OF LIFE PRE COVID, DURING COVID AND POST COVID IN ADULTS AGED 50-80 YEARS IN MUMBAI CITY.

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ABSTRACT

INTRODUCTION: COVID 19 is an infectious disease affecting the respiratory system of humans. Overall 37 million cases and 1 million deaths have been reported globally due to COVID 19. Immunity plays a major role in prevention and improving quality of life in COVID 19 and vitamin and minerals helps to regulate the immune system and gene expression. Consumption of nutritional supplements like Vitamin A, Vitamin B complex, Vitamin C, Vitamin D, Vitamin E, Zinc, Iron and herbal supplements is one of the therapeutic strategies in prevention, reduction in transmission of COVID 19 and Improvement in quality of life of participants. (cut short)

OBJECTIVE: To study the impact of nutritional supplementation on Quality of life in Pre, during and post COVID conditions in adults aged 50-80 years.

METHODOLOGY: A retrospective/prospective observational comparative study was conducted on 347 asymptomatic/symptomatic COVID positive participants between 50 – 80 years of age . Study was conducted at Lilavati Hospital and research centre, Bandra, Mumbai and data was collected by cognito forms via phone call. It included sections of demographic details, nutritional assessment, inflammatory parameters, clinical data, medical history, 24 hour diet recall, frequency and dosage of nutritional supplements consumption and WHO-QOL Bref questionnaire. Nutrition counselling and education was given to patients regarding the importance of diet and supplementation during COVID 19. The data was analysed by using the Statistical Set of Social Software programme for Windows (SPSS, version 20). The analysation of data involved t-tests and Chi-Square tests. p value less than 0.05 was considered statistically significant.

RESULTS: Out of 347 participants, 15.6% were asymptomatic and 83.5% were symptomatic. Maximum COVID positive patients were recorded with fever (88.9%), followed by fatigue (75%), cough (65. %), loss of appetite (65.6%), loss of taste and smell (73.3%), body pain (67.5%), throat pain (48.3%) and shortness of breath (50.7%). Other symptoms like Nausea (22.3%), vomiting (10.6%), diarrhea (11.1%), and unconsciousness (6.0%), were less likely to be seen in patients with COVID. High Blood pressure, Diabetes, High Cholesterol and Kidney disorders were mostly seen in patients above the age of 50 years, whereas diseases like Thyroid, GI disorders, Pneumonia, Seasonal allergies and hyperacidity were less likely to be reported. Results show that frequency and consumption of supplements like Vitamin A, C, D, E, B complex, Zinc, Iron, Omega 3, Ashwagandha, Giloy and Ayush Kwath increased during COVID. 52% of them consumed supplement in COVID times, 38% of them failed to consume them and 10% used it for a while and then stopped using it. Consumption of Vitamin A, C, D and E showed improved quality of life in different domains in participants whereas Omega 3 and curcumin failed to show positive correlation with quality of life. Significant increase in transform scores of physical health and social relationships domain was seen in participants consuming Vitamin C and D. Consumption of vitamin E supplement showed significant increase in all 4 domains of health whereas significant decrease was observed in transform score of psychological and social health in participants consuming vitamin A. Results also show significant difference ($p = <0.05$) in average dietary intake of Vitamin B12 and zinc in female participants. Significant difference was also

observed in dietary Vitamin B12 and zinc intake in female participants. Significant increase was seen in zinc consumption in the post COVID phase. More structured and interventional study can be performed to achieve desired results.

CONCLUSION: Significant increase in scores was observed in different domains of WHO-QOL in participants consuming Vitamin C, Vitamin D and Vitamin E. Significant decrease was seen in the transform score of psychological and social health of participants consuming Vitamin A. Dietary intake of micronutrient zinc and Vitamin B12 showed significant differences in female participants.

INTRODUCTION

A novel strain of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) disease (COVID-19) has been found and known as an infectious disease affecting the respiratory organs of humans. This disease was first caused by SARS-CoV-2 that was recognised in Chinese patients in Wuhan city having stern pneumonia and flu-like symptoms and spread globally. March 11, 2020 WHO recognised it as pandemic. COVID-19 is an infectious disease that spreads rapidly through droplet particles arising through sneezing and coughing action of an infected person.(A. H et al., 2021) At the moment, the therapeutic strategies to deal with the COVID-19 are supportive, and reducing transmission and currently vaccination drive has begun in the community and it's the only one effective preventive measure, which presumes isolation of patients and infected individuals and careful infection control. Currently it is major public health threat worldwide and it has been causing varying severities of illness.

When pathogens enter our body, the immune system kicks in. Activation of the immune system increases the demand for energy-producing substrates. Vitamins and minerals help regulate the immune system and gene expression. Vitamin A and D directly regulate the gene expression of cells that enhance the immune system and play an important role in the differentiation and maturation of immune cells. Vitamins A and C create a pro-antioxidant environment by generating destructive ROS. Proper and balanced nutrition contributes to the normal functioning of the immune system. Therefore, regardless of the nature of the challenge, the immune system can better cope with the challenge, and in an undernourished environment, the immune system responds poorly. *(Mrityunjaya et al., 2020)*

Vast number of people have been affected from COVID 19 and some of the clinical symptoms include cough, cold, fever, respiratory infection, fatigue and reduced oxygen saturation (%). Persistence of signs and symptoms has an impact on Physical, mental and general health wellbeing. Mid and long term effect of COVID 19 has reduced quality of life in certain people. There has been increasing evidence in consumption of dietary supplements and improvement in long and short term symptoms of COVID 19.

(Abolfathi et al., 2021) randomised control trial showed that aspects of quality of life of the elderly show the lack of significant changes in the mean scores of physical health and environmental health of the elderly in the intervention group. Hence, consumption of Multivitamin supplements can have a positive effect on increasing the quality of life of the elderly.

(G. S & S, 2007) conducted Double-blind, randomized, placebo-controlled trial on 225 hospitalized acutely ill older patients. Results showed that the effect of supplementation was seen in higher physical function, role physical, and social function scores and led to a statistically significant benefit in quality of life.
Low levels of micronutrients have been associated with adverse clinical outcomes during viral infections. Therefore, to maximize the nutritional defence against infections, a daily allowance of vitamins and trace elements for malnourished patients at risk of or diagnosed with coronavirus disease 2019 (COVID-19) may be beneficial.

NEED FOR STUDY:

In recent times of increasing COVID 19 cases, it is very important to maintain a good immunity. Social distancing, wearing a mask and vaccination are only preventive measures as of now. These methods do not guarantee 100% protection against the virus. The review of literature shows that various supplements like Vitamin C, Zinc, Vitamin D, Selenium, Herbal supplements like curcumin, allicin, peprine has antioxidant and anti-inflammatory effects which helps to build immunity, reduce hospital stays and improve recovery. Hence, there is a need to conduct detailed and interventional studies to improve the patient outcomes

METHODOLOGY:

A retrospective/prospective observational comparative study was conducted with the aim to assess the impact of nutritional and herbal supplementation in the Indian population age group 50-80 years pre COVID 19, during COVID 19 and post COVID 19. Participants were selected from Lilavati Hospital and research centre purely on basis of their consent. The research proposal was sanctioned by Municipal Corporation of Greater Mumbai (MCGM) and Ethical clearance was obtained from LILAVATI HOSPITAL AND RESEARCH CENTRE. Ethics committee for biomedical and health research (EC-BHR). Primary data was collected via phone call and recorded in cognito form. Different aspects which included in questionnaire were demographic details, Nutritional assessment, clinical data, medical history, questions regarding nutritional and herbal supplements and WHO-QOL bref.

RESULTS

A total of 347 participants in age group of 50-80 years were part of this study out of which 50% participants were male and 50% were female.

Table 1. General information about participants

Parameters	N	Mean
Age (years)	311	60.95
Duration of hospital stay (days)	311	8.37
Income (Rs.)	48	85973.83
No. of family members	342	5.34

In Above table 1 basic information of participants were mentioned. Mean of duration of hospital stay was 8.37, Income was 85973.83 and no. of family members was 5.34

Table 2. ANTHROPOMETRIC MEASUREMENTS

Parameters	Sex	N	Mean	P	Reference values
Height (cms)	Male	229	166.92	0.00	177
	Female	123	158.28	0.00	162
Weight (Kgs)	Male	229	70.08	0.02	65
	Female	123	63.14	0.03	55
BMI (kg/m2)	Male	229	25.01	0.042	18.5 – 22.9
	Female	122	25.00	0.04	18.5 – 22.9
IBW	Male	229	65.86		
	Female	121	54.85		

In table no 2 baseline characteristics of participants were found. Mean age for 228 male and 123 female participants was 61.27 and 60.37 respectively. Mean height for 229 male and 123 female participants was 166.92 and 158.28 cms respectively. Mean weight for 229 male and 123 female participants was 70.8 and 63.14Kgs respectively. Mean BMI for 229 male and 121 female participants was 25.01 and 25.00 respectively. Mean Ideal body weight (IBW) for 229 male and 121 female participants was 65.86 and 54.85 respectively.

In the above table a significant difference ($p = <0.05$) was found in Height (cms), Weight (Kgs), BMI (kg/m2) of male and female participants respectively.

INTAKE OF NUTRITIONAL AND HERBAL SUPPLEMENTATION

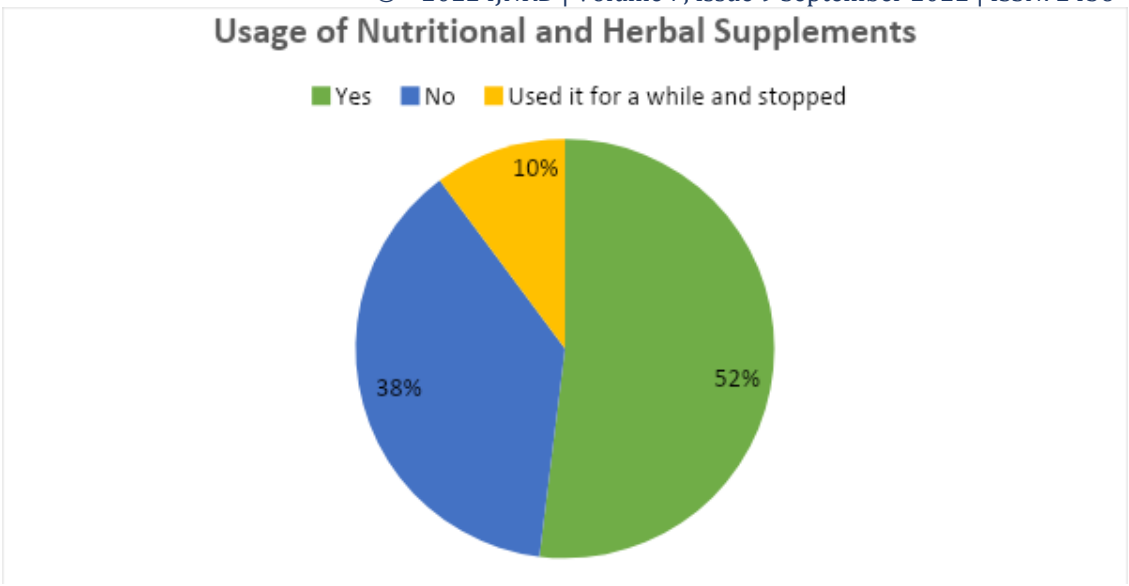

Fig. 2. Usage of nutritional and herbal supplementation

Above figure shows usage of nutritional and herbal supplements amongst participants. 52% of them consumed supplements in COVID times, 38% of them failed to consume them and 10% used it for a while and then stopped using it.

WHO-QOL and supplements.

Table 1. Vitamin A supplement with Psychological domain (Pre COVID)

Frequency	Domain 2 (Psychological)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
		0.106		0.017		**0.02**		0.014		**0.02**		0.7
Never	14.62		9.5		13.13		68.5		36.4		58.1	
Once a week	13.4		11.2		13.6		64.15		40.8		50.7	
2-3 times a week	14.8		9.2		11.56		68.28		39.26		47.9	
Everyday	14.29		9.6		12		64.77		35.87		49.37	

In the above table association of Vitamin A supplementation with mental health was shown. It was observed that there was significant difference ($p = <0.05$) in Transform score 1 and 2 during COVID 19 in participants consuming Vitamin A supplement Pre COVID and Post COVID. It indicates that Vitamin A was linked with better mental health parameter. However there was no significant difference observed in participants consuming Vitamin A supplement during COVID 19.

Correlation of Vitamin C with Social relationship (Post COVID)

Frequency	Domain 3 (Social relationship)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
Never	16.39	**0.012**	13.04	**0.018**	14.57	**0.002**	78.634	**0.009**	58.55	**0.029**	66.48	**0.005**
Once a week	15.73		11.94		12.71		62.188		43.414		53.478	
2-3 times a week	13.96		10.33		12.17		70.15		48.172		55.297	
Everyday	14.95		11.69		13.34		67.69		49.393		58.237	

In the above table consumption of Vitamin C was linked with social relationships. It showed that participants consuming Vitamin C supplement Pre COVID showed significant difference (p = <0.05) in Raw score pre COVID and consumption of supplement during and post COVID showed significant difference (p = <0.05) in raw and transform score. Therefore, participants consuming Vitamin C supplement had improved social relationships in participants.

Correlation of Vitamin C with Environmental (Pre COVID)

Frequency	Domain 4 (Environmental)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
Never	14.04	**0.017**	10.49	0.079	13.59	**0.041**	65.33	0	44.51	**0.038**	60.32	**0.048**
Once a week	13.12		11.04		13.12		64.88		43.96		57.23	
2-3 times a week	13.89		10.5		13.14		71.66		44.21		53.86	
Everyday	13.24		10.56		2.96		59.25		41.63		56.42	

Using Pearson Chi square test, the relationship between consumption of Vitamin C supplement and environmental health was observed. We can see that participants consuming Vitamin C showed significant difference (p = <0.05) in Transform score 1 and transform score 2.

Correlation of Vitamin D with Psychological Domain (Post COVID)

Frequency	Domain 2 (Psychological Domain)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
Never	14.62	0.166	9.5	0.017	13.13	0.02	68.5	0.014	36.44	0.02	58.163	0.07
Once a week	13.4		11.1		13.6		64.15		40.85		50.76	
2-3 times a week	14.8		9.28		11.56		68.28		39.26		47.962	
Everyday	14.29		9.61		12		64.77		35.871		49.39	

Correlation of Vitamin D with Social relationships (Post COVID)

Frequency	Domain 3 (Social relationships)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
Never	15.99	0.07	12.16	0	14.25	**0.015**	75.53	**0.024**	56	**0.02**	64.35	**0.043**
Once a week	13.1		11.85		12.85		62.61		45.55		57.62	
2-3 times a week	14.96		10.72		12.76		70.167		48.29		55.5	

Pearson's CHI SQUARE test was used to find correlation between vitamin D consumption and social relationships. It was seen that consumption of Vitamin D supplement Pre, during and Post COVID did not show significant difference in Raw score but showed difference ($p = <0.05$) in Transform score in Pre, during and post phases. Hence Vitamin D helps in improving social relationships in participants with COVID.

Correlation of Vitamin E with Psychological Domain (Post COVID)

Frequency						
	Transform score 1					
	Pre COVID	P	During COVID	P	Post COVID	P
Never	14.73	**0.021**	13.37	**0.002**	13.37	**0.049**
Once a week	14.96		11.46		11.46	
2-3 times a week	14.23		12.17		12.17	
Everyday	13.4		12.55		12.55	

In the above table consumption of Vitamin E was linked with mental health parameters. It was found that consumption of Vitamin E in Pre and post COVID phases showed significant difference ($p = <0.05$) in Raw and transform scoring. Therefore we can say that Vitamin E is linked with better mental health in participants with COVID 19. Whereas there was no significant difference observed in mental health during COVID phase.

Correlation of Vitamin E Supplement with Environment (Pre COVID)

Frequency	Domain 4 (Environment)											
	Transform score 1						Transform score 2					
	Pre COVID	P	During COVID	P	Post COVID	P	Pre COVID	P	During COVID	P	Post COVID	P
Never	27.18	**0.01**	20.65	**0.003**	25.32	0.05	13.93	**0.02**	10.48	0	13.58	**0.021**
Once a week	27.54		19.88		23.27		14.27		10.38		12.88	
2-3 times a week	25.45		20.92		24.05		13.97		10.75		12.92	
Everyday	26.87		20.7		24.37		12.65		10.65		12.85	

In the above table intake of Vitamin E was linked with Environmental health of participants. Results showed us that intake of Vitamin E supplement demonstrated significant difference (p = <0.05) in Raw and Transform score of Pre, during and post COVID questionnaire, whereas consumption Post COVID showed difference (p = <0.05) in transform score. There was no significant difference observed while consuming supplements during COVID.

DISCUSSION

SPSS version 20 was used to analyze the data recorded. As per analysis done, 50% participants were male and 50% were female. Average micronutrient intake was collected by 24 hour diet recall method Pre, during and post COVID. Mean of micronutrients like Vitamin A (mcg), Vitamin C (mg), Vitamin D (I.U.), Vitamin E (mg), Vitamin B12 (mcg), Zinc (mg) and Iron (mg) were calculated. Significant difference (p=<0.05) in Vitamin B12 was seen during COVID and zinc consumption in pre, during and post COVID phases. Using CHI SQUARE TEST frequency of consumption of supplements like Vitamin A, Vitamin C, Vitamin D, Vitamin E, Omega 3, Zinc, multivitamin, Giloy, Ashwagandha and Ayush Kwath was checked in pre, during and post COVID phase. Consumption of supplements was low in Pre COVID phase when compared with during and post COVID phase. Consumption of herbal supplements was very low compared to nutritional supplements. It was also found that consumption of Vitamin A, C, D and E showed improvement in various domains of quality of life in during and post COVID phases when compared with pre COVID phase.

Data analysis suggests that consumption of Vitamin A, C, D and E showed significant increase transform score 1 and 2 of quality of life domains in during and post COVID phases. It showed that nutrition counselling imparted amongst participants of 50 – 80 years had positive impact on their awareness and knowledge regarding supplements and nutrition.

CONCLUSION

The study concludes that consumption of Vitamin A, C, D and E showed significant increase transform score 1 and 2 of quality of life domains in during and post COVID phases. It showed that nutrition counselling imparted amongst participants of 50 – 80 years had positive impact on their awareness and knowledge regarding supplements and nutrition.

REFERANCES

Abolfathi, Pasdar, Y., Kheiri, M., Irandoost, S. F., & Darabi, F. (2021). The effect of consuming multivitamin/mineral supplements on elderly quality of life: Based on randomized control trial. *Journal of Education and Health Promotion*, *10*(1), 63. https://doi.org/10.4103/JEHP.JEHP_129_20

Abulmeaty, M. M. A., Aljuraiban, G. S., Shaikh, S. M., ALEid, N. E., Mazrou, L. R. Al, Turjoman, A. A., Aldosari, M. S., Razak, S., El-Sayed, M. M., Areabi, T. M., Alsalafi, R. M., Al-Helio, Y. S., Almutairy, A. B., & Molla, H. N. (2021). The Efficacy of Antioxidant Oral Supplements on the Progression of COVID-19 in Non-Critically Ill Patients: A Randomized Controlled Trial. *Antioxidants 2021, Vol. 10, Page 804*, *10*(5), 804. https://doi.org/10.3390/ANTIOX10050804

Annweiler, C., Beaudenon, M., Simon, R., Guenet, M., Otekpo, M., Célarier, T., Gautier, J., & GERIA-COVID study group (2021). Vitamin D supplementation prior to or during COVID-19 associated with better 3-month survival in geriatric patients: Extension phase of the GERIA-COVID study. *The Journal of steroid biochemistry and molecular biology*, *213*, 105958. https://doi.org/10.1016/j.jsbmb.2021.105958

Tan, C. W., Ho, L. P., Kalimuddin, S., Cherng, B., Teh, Y. E., Thien, S. Y., Wong, H. M., Tern, P., Chandran, M., Chay, J., Nagarajan, C., Sultana, R., Low, J., & Ng, H. J. (2020). Cohort study to evaluate the effect of vitamin D, magnesium, and vitamin B_{12} in combination on progression to severe outcomes in older patients with coronavirus (COVID-19). *Nutrition (Burbank, Los Angeles County, Calif.)*, *79-80*, 111017. https://doi.org/10.1016/j.nut.2020.111017

Doaei, S., Gholami, S., Rastgoo, S., Gholamalizadeh, M., Bourbour, F., Bagheri, S. E., Samipoor, F., Akbari, M. E., Shadnoush, M., Ghorat, F., Jarrahi, S. A. M., Mirsadeghi, N. A., Hajipour, A., Joola, P., Moslem, A., & Goodarzi, M. O. (2021). The effect of omega-3 fatty acid supplementation on clinical and biochemical parameters of critically ill patients with COVID-19: a randomized clinical trial. *Journal of Translational Medicine*, *19*(1). https://doi.org/10.1186/S12967-021-02795-5

AlSafar, H., Grant, W. B., (2021). COVID-19 Disease Severity and Death in Relation to Vitamin D Status among SARS-CoV-2-Positive UAE Residents. *Nutrients.*

Lakkireddy, M., Gadiga, S. G., Malathi, R. D., Karra, M. L., Raju, I. S. S. V. P. M., Ragini, Chinapaka, S., Baba, K. S. S. S., & Kandakatla, M. (2021). Impact of daily high dose oral vitamin D therapy on the inflammatory markers in patients with COVID 19 disease. *Scientific Reports*, *11*(1), 10641. https://doi.org/10.1038/S41598-021-90189-4

Akbariqomi, M., Hosseini, M. S., Rashidiani, J., Sedighian, H., Biganeh, H., Heidari, R., Moghaddam, M. M., Farnoosh, G., & Kooshki, H. (2020). Clinical characteristics and outcome of hospitalized COVID-19 patients with diabetes: A single-center, retrospective study in Iran. *Diabetes research and clinical practice*, *169*, 108467. https://doi.org/10.1016/j.diabres.2020.108467

Mohseni, H., Amini, S., Abiri, B., & Kalantar, M. (2021). Do body mass index (BMI) and history of nutritional supplementation play a role in the severity of COVID-19? A retrospective study. *Nutrition & Food Science*, *51*(6), 1017–1027. https://doi.org/10.1108/NFS-11-2020-0421

Mrityunjaya, M., Pavithra, V., Neelam, R., Janhavi, P., Halami, P. M., & Ravindra, P. V. (2020). Immune-Boosting, Antioxidant and Anti-inflammatory Food Supplements Targeting Pathogenesis of COVID-19. In *Frontiers in Immunology* (Vol. 11). Frontiers Media S.A. https://doi.org/10.3389/fimmu.2020.570122

AlSafar, H., Grant, W. B., (2021). COVID-19 Disease Severity and Death in Relation to Vitamin D Status among SARS-CoV-2-Positive UAE Residents. *Nutrients.*

Gariballa, S., & Forster, S. (2007). Dietary supplementation and quality of life of older patients: a randomized, double-blind, placebo-controlled trial. *Journal of the American Geriatrics Society*, *55*(12), 2030–2034. https://doi.org/10.1111/j.1532-5415.2007.01435.x

Siddiqui, A. F., Wiederkehr, M., Rozanova, L., & Flahault, A. (2020). Situation of india in the COVID-19 pandemic: India's initial pandemic experience. *International Journal of Environmental Research and Public Health*, *17*(23), 1–18. https://doi.org/10.3390/ijerph17238994

Meydani, S. N., Leka, L. S., Fine, B. C., Dallal, G. E., Keusch, G. T., Singh, M. F., & Hamer, D. H. (2004). Vitamin E and respiratory tract infections in elderly nursing home residents: a randomized controlled trial. *JAMA*, *292*(7), 828–836. https://doi.org/10.1001/jama.292.7.828