The prevalence of anaemia and selected micronutrient status in pregnant teenagers of Polokwane Municipality in the Limpopo Province

[a] Bopape MM, [b] Mbhenyane XG , [c] Alberts M
[a] Human Nutrition Programme, University of Limpopo, Sovenga, Limpopo Province. [b] Department of Human Nutrition, University of Venda for Science and Technology, Venda, Limpopo Province. [c] Medical Sciences Programme, University of Limpopo, Sovenga, Limpopo Province
Correspondence to: Prof XG Mbhenyane, e-mail: kombim@univen.ac.za
Keywords: prevalence; anaemia; micronutrient; pregnant; teenagers

Abstract

Objective: The objective of this study was to determine the iron, folate and vitamin B_{12} status of pregnant teenagers in the Limpopo Province.

Design: This is a descriptive study with analytical components.

Methods: Pregnant teenagers aged between 12 and 21 years were recruited from Mankweng, Dikgale, Makotopong and Kganya clinics in the Limpopo Province, South Africa. Dietary data and blood were collected for the analysis of iron, folate and vitamin B_{12} status.

Outcome measures: Blood was collected for the analysis of iron, folate and vitamin B_{12} status. Dietary data were collected using a repeated 24-hour recall questionnaire and a food frequency questionnaire, and demographic data were also collected using a standard questionnaire.

Results: The mean and standard deviation for iron, folate, vitamin B_{12} and vitamin C were 6.5 mg ± 3.3, 155.3 µg ± 92.7, 2.3 µg ± 2.8 and 31.2 mg ± 36.2 respectively. The prevalence of anaemia was high (36%), with iron deficiency anaemia being the most prevalent (57%) as compared to either folate (9%) or vitamin B_{12} (7%) deficiency anaemia. There was a significant difference ($p = 0.03$) in serum folate between teenagers who were receiving folic acid supplements and those who were not receiving any such supplements.

Conclusions: More than a third of the teenagers were anaemic and this is considered to be high. These teenagers need nutrition education so that they will be able to choose nutritious food, especially at a critical stage such as pregnancy.

S Afr J Clin Nutr 2008;21(4):332-336

Introduction

Teenagers are frequently at very high risk of developing nutrient deficiencies, including iron deficiency and folate deficiency anaemia.[1] A survey in the Western Cape among nonpregnant teenagers has also shown some serious dietary inadequacies with regard to a number of nutrients, including iron.[2] This was partly explained by the poor food choices made and also by the accelerated growth rate typical in adolescence.

The risk for deficiencies is further increased during pregnancy as teenagers often enter pregnancy with less than adequate nutrient stores and are thus unable to withstand the demands imposed by pregnancy.[3] It is also suggested that there could be competition for nutrients between the young growing mother and the fetus.[4] Failure to meet these nutrient requirements could result in poor pregnancy outcome for both mothers and their babies. The negative outcomes include maternal mortality, low birth weight, prematurity, neural tube defects and spontaneous abortions, conditions highly associated with teenage pregnancy.[5]

Methods

The study population consisted of conveniently sampled pregnant teenagers aged 12 to 21 years attending antenatal clinic (ANC) at Mankweng, Dikgale, Makotopong and Kganya clinics between November 2000 and February 2001. Mankweng Clinic is situated in Mankweng Township, which is a semi-urban area situated 30 km east of Polokwane. The area offers adequate housing, electricity, running water, two shopping centres and a university and the roads are tarred. Makotopong, Dikgale and Kganya clinics are situated in the rural areas of the province with inadequate infrastructure such as roads and running water, but the houses are electrified.

Ethics approval was granted by the Ethics Committee of both the University of the North, now the University of Limpopo, and the Limpopo Province Department of Health and Welfare. The purpose of the study, the procedures, issues relating to confidentiality as well as their freedom to participate or withdraw from the study were explained to the participants. They were then requested to sign consent forms and those under 18 were requested to ask permission from their parents or legal guardians.

The procedures included administration of the standard questionnaire, blood collection and completion of the 24-hour recall questionnaire and the food frequency questionnaire (FFQ). The nutrient intakes were assessed using a 24-hour recall questionnaire that was administered twice, one for a weekday (any day during the week) and the second for a Sunday, in order to get a good estimate of the teenagers' intake. Reliability of the 24-hour recall questionnaire was established by comparing two 24-hour recalls against each other to check whether the intakes of the two days were statistically different or not. Two methods of dietary assessment (24-hour recall questionnaire and FFQ) were used to determine dietary intake. The FFQ consisted of only those food items rich in folate, iron, vitamin B_{12}, vitamin C, phytates (such as cereals) and tannins. The aim was to ensure that food items rich in folate, iron, vitamin B_{12} and vitamin C that did not form part of the teenagers' daily intake were also included in the analysis of dietary intake. All the interviews were conducted by the researcher, who is a registered dietician, using the local language, Sepedi. The questionnaire was face validated by pretesting it on 10 teenagers from the University of Limpopo. A question in the questionnaire required the teenagers to indicate whether they were taking any supplements or not and also to specify the types of supplement they were on.

On the first day, the researcher interviewed the participants and filled in the first 24-hour recall questionnaire and the FFQ, and the clinic nursing staff collected the blood specimen. Depending on the trimester and what would be convenient to the teenagers, the participants were then seen again two to four weeks later. On the second contact, the second 24-hour recall questionnaire was completed, and in some cases where the blood could not be collected during the first visit the nurse drew the sample during the second visit. The subjects were shown food models in order to make it easier for them to estimate the amounts of food consumed. In cases where the food models could not be used, household measures such as teaspoons and tablespoons were used and these were converted into grams by using the conversion figures in the *Food Quantities Manual*.[6]

Venous blood was collected, analysed for full blood count and then centrifuged to separate serum from blood cells. The serum was then kept frozen at -80 °C for later use. On the day of the analysis, samples were allowed to thaw at room temperature before being analysed. The levels of serum folate, ferritin and vitamin B_{12} were determined using the Beckman Coulter Access Immunoassay system. The full blood count was determined by using the Coulter STKS (Beckman) system. All blood samples were analysed in the Medical Science laboratory at the University of Limpopo.

Data analysis

The intakes were compared with the Estimated Average Requirement (EAR) for pregnancy[7] and levels of intake less than 67% of the EAR were considered deficient.[8] Each item on the FFQ was coded and the responses were expressed as daily, weekly, monthly or never consumed. The *Food Finder 2* was used to analyse nutrient intakes.[9] Biochemical parameters were compared to cutoff points for pregnancy. The teenagers were considered iron depleted if the serum ferritin concentration was < 12 µg/l,[10] folate deficient with the serum folate < 3 ng/ml[2,3] and vitamin B_{12} deficient if serum vitamin B_{12} was < 145 pg/ml.[11] Anaemia was diagnosed when the haemoglobin concentration (Hb) was < 11 g/dl, while iron deficiency anaemia was diagnosed with Hb < 11 g/dl and ferritin < 12 µg/l. Factors such as inflammation are known to increase the serum ferritin levels and thus change the significance of ferritin as an indicator of iron status. It is for this reason that at least two abnormal values of iron status, as indicated above, should be used in the diagnosis of iron deficiency anaemia.[10] All the statistical analysis was done using Statistical Package for Social Sciences (Version 11.0 for Windows).

Frequency counts and percentages were used for discrete variables. Continuous variables such as dietary intakes and biochemical parameters were summarised using minimum and maximum values, means and standard deviations. Data were analysed separately for teenagers who were taking supplements and those who were not taking any supplements, and the results were summarised using means and standard deviations. The mean values of the variables were compared using t-tests. Pearson's correlation coefficient was used to compare the dietary intake with the blood vitamins determined in the study. Whenever values were not normally distributed, log transformation was carried out. A p-value of less than 0.05 was considered significant.

Results

A sample of 120 teenagers was initially decided upon, 30 subjects from each clinic. The sample was then increased to 130 subjects in total. Seven pregnant teenagers out of the 130 who participated in the study dropped out, leaving a total sample of 123 teenagers. The only reason subjects dropped out was failure of those teenagers to return for follow-up (either for completion of the second 24-hour recall questionnaire or for blood collection).

The participants were divided into two categories of 12–18 (38%) and 19–21 (62%) years of age, according to age categories of the dietary reference intakes (DRI) for pregnant women. Seventy-five teenagers (61%) were in the third trimester, 42 (34%) in the second trimester and six (5%) in the third trimester of pregnancy.

One hundred and four teenagers (84.6%) were in secondary school or had secondary school education as their highest qualification, 16 (13%) were busy with tertiary studies, while three (2.4%) had left school at primary school level (Table I). Only three teenagers (2.4%) were employed, six (4.9%) were unemployed and not attending school, while 14 (92.7%) were still scholars, with no employment. Of the 44 teenagers (35%) with previous pregnancies, 33 (75%) had lost their children due to miscarriages, stillbirths and early childhood diseases.

The mean nutrient intake obtained from the 24-hour recall questionnaire, except that for vitamin B_{12}, was inadequate for all the micronutrients studied (Table II). Only three (2%), five (4%), 54 (44%) and 32 (26%) of the teenagers had an intake ≥ 67% of the EAR for iron, folate, vitamin B_{12} and vitamin C respectively. The FFQ similarly revealed poor intake of iron, folate and vitamin C among the teenagers. Twenty-nine per cent of the teenagers reported eating

Table I: Study participants' gestational age, level of education, employment and parity by age

Parameter	Age				Total	
	12–18 N = 47		19–21 N = 76			
Gestation	N	%	N	%	N	%
0–12 weeks	2	4.3	4	5.3	6 (4.9)	4.9
12–24 weeks	22	46.8	20	26.3	42 (34.1)	34.1
24–36 weeks	23	48.9	52	68.4	75 (61)	61.0
Education						
Primary	1	2.1	2	2.6	3 (2.4)	2.4
Secondary	46	97.9	58	76.3	104 (84.6)	84.6
Tertiary	–	–	16	21.1	16 (13)	13.0
Employment						
Scholar	46	97.9	68	89.5	114	92.7
Unemployed	–	–	6	7.9	6	4.9
Employed	1	2.1	2	2.6	3	2.4
Parity	N	%	n	%	n	%
None	36	76.6	43	56.6	79	64.2
One	11	23.4	29	38.2	40	32.5
Two	0	0	4	5.3	4	3.3

Table II: Dietary intake of selected micronutrients in pregnant teenagers (n = 123) based on the 24-hour recall questionnaire and in relation to recommended intakes[7]

Micronutrient (units)	Min	Max	Mean (SD)	EAR	Prevalence of dietary inadequacy	RDA	Prevalence of dietary inadequacy
					N (%)		N (%)
Iron (mg)	1.3	23.6	6.5 (3.3)				
≤ 18 years				22	47 (100)	27	47 (1000)
19–20 years				23	73 (96)	27	73 (96)
Total					120 (98)		120 (98)
Folate (µg)	22	490	155.3	520		600	
≤ 18 years			(92.7)		47 (100)		47 (100)
19–20 years					71 (93)		73 (98)
Total					118 (96)		120 (98)
Vitamin B_{12} (µg)	0	16.6*	2.3 (2.8)	2.2		2.6	
≤ 18 years					31 (66)		31 (66)
19–20 years					38 (50)		42 (55)
Total					69 (56)		73 (59)
Vitamin C (mg)	0	199	31.2				
≤ 18 years			(36.2)	66	41 (87)	80	44 (94)
19–20 years				70	50 (66)	85	57(75)
Total					91 (74)		101 (82)

* Includes outliers with high intakes

red meat once a week, while 39% ate chicken once a week. Rich sources of folate such as liver was unpopular among the teenagers (48% reported that they never eat liver), while 37% reported eating liver once a month.

All the mean blood vitamin concentrations were at or above the cutoff points specified for pregnancy (Table III). Anaemia was present in 44 teenagers (36%) when the cutoff Hb value of 11 g/dl was used. Almost half (n = 57; 46%) of the teenagers were iron depleted as defined by a ferritin concentration of < 12 µg/l, while the prevalence of biochemical folate and vitamin B_{12} deficiency was 9.8% and 7.3% respectively. Further data analysis was done to diagnose the most common type of anaemia (Hb < 11 g/dl) among the 44 teenagers (36%). Twenty-five teenagers (57%) had iron deficiency anaemia (Hb < 11 g/dl and ferritin < 12 µg/l), while four (9%) and three (7%) had folate deficiency and vitamin B_{12} deficiency anaemia, respectively. Microcytic anaemia (MCV < 80 fl) was evident in 12% and macrocytosis (MCV < 100 fl) in 4% of the teenagers.

Table III: The mean and standard deviation (SD) of the biochemical values in pregnant teenagers (n = 123)

Parameter (units)	Minimum	Maximum	Mean (SD)	Cutoff value	Prevalence of deficiency
					N (%)
RBC (10^3/µl)	2.71	4.95	3.86 (0.38)	3.8	–
Hb (g/dl)	5.4	13.9	11.32 (1.33)	11^{10} 10.5^{20}	44 (36%) 26 (21.1%)
MCV (fl)	68	106	88.66 (7.13)	80^{8} 100^{8}	15 (12) 5 (4)
Folate (ng/ml)	2.39	185.8	21.22 (42.65)	3^{11}	12 (9.8)
Ferritin (µg/l)	3.8	68.9	16.27 (10.77)	12^{10}	57 (46%)
B_{12} (pg/ml)	78	794	272.56 (114.94)	145^{12}	9 (7.3%)

i) RBC: red blood cells; ii) Hb: haemoglobin; iii) MCV: mean corpuscular volume (iv) folate: serum folate; v) ferritin: serum ferritin; vi) B: serum vitamin B_{12}; superscript = reference number

There was no significant difference (p > 0.05) in Hb, serum ferritin and serum vitamin B_{12} concentrations between the teenagers who reported using supplements (ferrous sulphate [175 mg once daily] and folic acid [5 mg once daily]) and those who were not using any supplements. However, serum folate was significantly (p = 0.03) higher in the supplemented than the nonsupplemented group (Table IV).

Table IV: Comparison between mean values of biochemical parameters between Group A and Group B

	Type of supplement	N	Mean (SD)	p-value
Hb	Both*	86	11.4 (1.4)	0.49
	None*	27	11.4 (1.1)	
Folate	Both	86	24.9 (47.1)	0.03**
	None	27	10.2 (23.1)	
Ferritin	Both	86	17.2 (11.6)	0.34
	None	27	15.1 (8.8)	
Vit B_{12}	Both	86	274.1 (118.5)	
	None	27	253.4 (95.4)	0.36

*Both = subjects who were getting both folate (5 mg once daily) and ferrous sulphate (175 mg once daily) supplements
*None = subjects who were not getting any supplements
** T-test

Discussion

The study comprised 123 pregnant teenagers aged between 12 and 21 years with gestational ages that varied across all three trimesters of pregnancy. The prevalence of anaemia, diagnosed by Hb < 11 g/dl, was 36%, which is lower than the prevalence of 26% that was reported among pregnant adult women residing in Bloemfontein[10] and the 20.5% prevalence among pregnant adult women in Soweto.[12] However, a higher prevalence of 41.5% has been reported among Namibian pregnant women than the prevalence reported in the current study.[11]

Iron deficiency is the most common cause of anaemia.[5] Similarly, the most common anaemia among the teenagers in this study was iron deficiency. About 25 out of the 44 teenagers were diagnosed to have iron deficiency anaemia with Hb < 11 g/dl and ferritin < 12 µg. Iron depletion, diagnosed by ferritin < 12 µg, was seen in 46% of the pregnant teenagers. The prevalence was, however, low when compared to 56.9% reported among pregnant women in Bloemfontein[10] and 62.2% found in pregnant adult women from Soweto.[12] Ferritin is considered to be the most reliable indicator of iron status in pregnancy; however, its serum concentration increases in inflammatory states and the number of iron-depleted pregnant teenagers could actually be higher if infection, which was not documented, was present in this study.[13]

The causes of iron deficiency are known to be multifactoral, often occur concurrently and include inadequate intake, poor availability and pica.[1] Most (98%) of the teenagers were unable to meet two-thirds of the EAR for iron, a factor that could have led to poor iron status among this group. A similarly poor dietary intake of iron has been reported in 90% of pregnant women in Minneapolis and St Paul, USA.[14] The findings from the FFQ in this study were also supportive of a poor iron intake as food rich in iron was not popular among the teenagers. Steyn et al (1989)[15] have also reported a poor iron intake among black rural adolescents in the Western Cape, whose intake of red meat was ranked low on a food preference checklist. Additionally in the present study, the inclusion of foods of animal origin was very low, with meals consisting mainly of high amounts of phytate-rich foods such as bread, maize meal and indigenous vegetables. The total iron bioavailability of such a meal has been reported to be between 1% and 5% due to the presence of iron inhibitors as compared to 10% bioavalability when some haem iron and food containing high levels of vitamin C are added to the diet.[13] Iron inhibitors such as tannin in tea and phytates in bread, maize and indigenous vegetables are known to decrease the absorption of nonhaem iron, making it essential to increase dietary iron intake (from foods and supplements) when such inhibitors are present in the diet.[10,16] Vitamin C plays a critical role in the absorption of nonhaem iron, especially where the amount of meat in the diet is negligible.[13] Vitamin C intake in this study was also very low, a factor that could have also contributed to the poor iron status in the teenagers. The low vitamin C intake was associated with the poor intake of fruits and vegetables, a practice that is known to be common among teenagers.[15] Soil ingestion (pica), which is known[1] to contribute to poor iron status, may have been an additional factor in the causation of iron deficiency anaemia in the present study, since about a third (34.1%) of the teenagers reported eating soil. Although not investigated in this study, it is possible that the soil eaten could have been contaminated with parasites, such as hookworms, which are known to cause blood loss from the gastrointestinal tract[13] and could have contributed to the high prevalence of iron deficiency in the present study.

It is expected that iron status should improve among women taking supplements, and a positive correlation between serum ferritin concentration and supplemental iron has been reported.[4] Furthermore, Patterson et al[17] also found higher ferritin and Hb levels among Australian women taking iron supplements when compared with those who were not taking any supplements. However, it would appear that in the present study the rate of compliance with iron supplements was low, since no significant difference was found between the supplemented and nonsupplemented teenagers. Similar findings have been reported by Kruger et al[8] in relation to poor compliance and improvement in iron status following the administration of iron supplements.

Folate deficiency, diagnosed by a serum folate concentration of < 3 ng/ml,[23] was found in 12 (9.8%) of the teenagers. This is reflective of the poor dietary intake data that revealed that only five of the teenagers had a folate intake above 67% of the EAR. There could of course have been underreporting of the food(s) actually consumed, or the compliance with folic acid supplements was better than that for iron supplements. Although many teenagers reported consuming indigenous vegetables regularly, the portion sizes were seemingly inadequate to meet the folate requirements and the consumption of folate-rich sources, such as liver, was infrequent. No correlation could be found between the intake of dietary folate and serum folate concentration. It would appear though that teenagers who reported taking supplements actually did so, as there was a significant difference in serum folate concentration between the group that was receiving folate supplements and the one that was not. It should, however, be borne in mind that unlike red cell folate, which was not determined in this study and is known to be a better measure of long-term folate status,[18] the serum folate concentrations do not allow one to distinguish between a recent folate intake and chronic deficiency accompanied by depleted body stores.[19] The results of the present study should thus be interpreted with caution as the high serum levels could be due to recent folate intake and may not reflect adequate body stores. In this regard, megaloblastic anaemia (defined by MCV above 100 fl) was found in five (4%) of the teenagers, suggesting that some teenagers were not only deficient but possibly also folate depleted.[20]

A higher proportion of teenagers with folate deficiency (33.3%) was in the first trimester, 7.1% were in the second trimester while 9.9% were in the third trimester. This may be indicative of teenagers entering pregnancy with a poor folate status, a possibility that emphasises the need for ensuring an adequate folate intake for all women of childbearing age. Folate deficiency could be caused by inadequate intake, poverty, poor food selection and incorrect preparation methods.[23]

The prevalence of vitamin B_{12} deficiency, diagnosed by serum vitamin B_{12} less than 145 pg/ml, was low in the study (n = 9). This supports

other findings in the literature that indicate that pernicious anaemia tends to be very rare in women of childbearing age[21] as well as, in the South African context, the findings of Kruger et al[8] who reported that the occurrence of vitamin B_{12} deficiency was uncommon among pregnant women in the Cape Peninsula. It takes about five to six years for vitamin B_{12} deficiency symptoms to appear after restriction of the intake of dietary sources of vitamin B_{12}. Similarly, a lower prevalence of biochemical vitamin B_{12} deficiency has been reported among women attending ANC at Baragwanath Hospital (5%)[12] and pregnant women in the Cape Peninsula (5%).[8]

Finally, teenagers are said to be at higher risk for maternal complications.[22] It has been reported, for instance, that 14% of adolescent pregnancies in the USA end in miscarriages.[22] In the current study, 44 (35%) of the teenagers had a history of previous pregnancies, with only 11 (25%) reporting that they had children. The remainder of the pregnancies (75%) ended in miscarriages or stillbirths or the children may have died in their infancy. This high rate of fetal/infant loss may be attributed to poor dietary intake associated with poor food choices, competition between the fetus and the mother for nutrients or inadequate prepregnancy nutrient stores in the body.[22]

In conclusion, the prevalence of anaemia, especially iron deficiency anaemia, was high as more than a third of pregnant teenagers were diagnosed with Hb < 11 g/dl. There was also a poor dietary intake of iron, folate and vitamin C, which necessitates intervention by health care providers in order to prevent complications that might arise as a result of these dietary inadequacies.

References

1. O'dea JA. Iron deficiency in adolescent girls. Nutridate 2001;12:1–10.
2. Steyn NP, Wicht CL, Rossouw JE, et al: Nutritional status of 11-year-old children in the Western Cape. The SAJ Food Sci & Nutr 1989;15–19.
3. Sargent RG, Schulken ED. Black and white adolescent female's prepregnancy nutritional status. Adolescence 1994;29:854–857.
4. Scholl TO, Hediger ML, Scholl JI, et al: Maternal growth during pregnancy and the competition for nutrients. AJCN 1994;60:183–8.
5. Scholl TO, Hediger ML. Anaemia and iron deficiency anaemia: compilation of data on pregnancy outcome. AJCN 1994;59(suppl):492S–501S.
6. National Research Programme for Nutritional Intervention. Food quantities manual. 2nd ed. Cape Town: MRC; 1991.
7. Nutritional Information Centre of the University of Stellenbosch (NICUS). The dietary reference intakes. National Academy Press; 2003.
8. Kruger M, Dhansay MA, Van Standen E, et al. Anaemia and iron deficiency in women in the third trimester of pregnancy receiving selective iron supplementation. SAJ of Food Sci & Nutr 1994;6:132–137.
9. Medical Research Council. Food finder 2. Cape Town: MRC; 2001.
10. Dannhauser A, Bam R, Joubert G, et al: . Iron status of pregnant women attending the antenatal clinic at Pelonomi hospital, Bloemfontein. SAJCN 2000;13:38–46.
11. Thomson J. Anaemia in pregnant women in eastern Caprivi, Namibia. SAMJ 1997;87:1544–1547.
12. Patel RC, Lamparelli RDV, Sacks AJ, et al: Nutritional anaemia in pregnant black women in Soweto. SAJ Food Sci & Nutr 1992;4:29–32.
13. Hercberg S, Galan P. Nutritional anaemias. Clin Haem 1992;5:143–165.
14. Swensen AR, Harnack LJ, Ross JA. Nutritional assessment of pregnant women enrolled in the special supplemental program for women, infants and children (WIC). JADA 2001;101:903–907.
15. Steyn NP, Wicht CL, Rossouw JE, et al. The eating pattern of adolescents in the Western Cape. SAJ Food Sci & Nutr 1990;2:23–27.
16. Milman N, Bergholt T, Keld-Erik BYG, et al: Iron status and iron balance during pregnancy a critical reappraisal of iron supplementation. Acta Obstet Gynecol Scand 1999;78:749–757.
17. Patterson AJ, Brown WJ, Roberts DCK, et al: Dietary treatment of iron deficiency in women of childbearing age. AJCN 2001;74:650–6.
18. Centers for Disease Control (CDC). Folate status in women of childbearing age. Morbidity and mortality weekly report (MMWR) 2000;49:962–965.
19. Lee RD, Nieman DC. Nutritional assessment. Boston, Massachusetts: McGraw-Hill; 1996.
20. Baynes RD, Meriwether WD, Bothwell, T.H et al. Iron and folate status of pregnant black women in Gazankulu. SAMJ 1986;70:143–151.
21. Abrams SR. Handbook of medical problems during pregnancy. California: Appleton and Lange; 1989.
22. Story M, Alton I. Nutrition issues and adolescent pregnancy. Nutrition Today 1995;30:142–151.
23. Bailey LB, Mahan CS, Dimperio D. Folacin and iron status in low-income pregnant adolescents and mature women. AJCN 1990;33:1997–2001.

Society News

SASPEN NEWS

The SASPEN Biennial General Meeting (BGM) was purposefully convened during the recently held Nutrition Congress with the aim of electing the new SASPEN Council from those members who were duly nominated.

There may be a number of reasons why SASPEN members did not/could not attend the BGM. Consequently, a quorum, as required by the Society's Constitution, was not reached. Those members present unanimously agreed to proceed and elect all the duly nominated members to the Council and seek ratification by post or e-mail so that the elected Council can proceed with its work and plan ahead.

This communication serves to invite SASPEN members to ratify the new Council, which will be considered duly elected in the absence of any objections. Any SASPEN member who has any objections to the decision taken at the BGM is requested to submit the objection in writing to the SASPEN President at dlabadarios@hsrc.ac.za. Confidentiality and anonymity will be strictly respected, should it be requested.

The elected Council plans to meet before the end of the year and further developments will be communicated in due course.

May I take this opportunity, on behalf of the SASPEN Council, to wish all our members the very best for the Festive Season.

Prof D Labadarios
SASPEN: President

The newly elected Council is as follows:

Portfolio	Name
President	Prof D Labadarios
President-Elect	Mrs Janicke Visser
Scientific Secretary	Dr Stephen van der Merwe
Treasurer	To be elected from members
Member	Mrs Nazeema Esau
Member	Ms Berna Harmse
Member	Mrs Dorothea McDonald
Member	Mrs Caida MacDougall
Member	Mrs Anette Prinsloo
Member	Ms Talent Tanase
Member	Ms Tristi van der Spuy
Past President	Dr Renée Blaauw