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النشرة الوبائية السعودية
تصدرها وزارة الصحة
الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي
المجلد الثاني عشر - العدد الثاني - ابريل - يونيو ٢٠٠٥

Knowledge of health workers at a Riyadh hospital of health care waste management.

Healthcare activities such as immunizations, diagnostic tests, medical treatments, and laboratory examinations are inevitably followed by the generation of Health Care Waste (HCW). The management of HCW poses a major and ongoing problem in most countries, including the Kingdom of Saudi Arabia. Adequate knowledge of health care workers of the steps of waste management is crucial for the success of any HCW management program.

This study investigates the knowledge of health workers at a Riyadh hospital of the types of waste and steps of HCW management. This was implemented through a descriptive cross-sectional study among health care workers at the hospital. Data was collected by means of a pre-prepared questionnaire, inquiring on basic demographic data and the knowledge of health workers of the types of HCW, their segregation, storage, and transport inside and outside the hospital, and whether the participant had received previous training on HCW management. The questionnaire included 44 knowledge questions, a correct answer was given a score of 1 and an incorrect answer 0. A composite score based on these 44 questions was developed and used for further analysis. In the absence of any standard criteria of scoring for such knowledge questions, the median of the composite score was used as a cut off point to split the workers into two categories: high knowledge group and low knowledge group. Data was collected during July 2004, then entered and analyzed using SPSS version 10 software.

The study population was 321 health workers. Their mean age was 35.7 years (SD ± 8.6), the highest age group between 30-40 years old (41.7%). There were 216 (70.3%) females, and 91 (29.6%) males; 66 (22.8%) Saudis and 223 (77.2%) non-Saudis; 73 (23.4%) doctors and 239 (76.6%) nurses. The highest percentage were working in the Medicine department 118 (44.7%), followed by the Surgery department 64 (24.2%), Emergency Room 13 (4.9%), and other departments 69 (26.1%). Knowledge of health workers about the classification of each type of waste material is shown in table 1.

Regarding waste segregation, correct responses were: HCW is segregated at the source of generation 72.9%, medical staff are responsible for waste segregation at its generation site 75.9%, sharp waste should be segregated in special containers

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98.1%, color coded bags are used for segregation 96.8%, and liquid medical waste should not be disposed-of with domestic waste 91.7%.

Regarding the color of bag used for segregation of each type of waste, 91.3% knew that yellow bags should be used for infectious waste, red bags for pathological waste 80.4%, and black bags for non-risk waste 83.8%.

Regarding collection of HCW, only 22.9% knew that bags should not be closed by stapling before transport, waste should be collected from the generation site at least once daily 83.2%, and black and yellow bags should not be collected at the same time 79.4%.

Regarding transport of HCW inside the hospital, 74.5% knew that color-coded bags should be used for transport of HCW inside the hospital. Only 3.2% knew that certain allocated workers should be responsible for transport of HCW inside the hospital. However, 84.3% of the study participants did not know which personnel are responsible; 54.7% didn't know by what means HCW are transported inside the hospital; and only 37.2% knew that designated trolleys should be used for that purpose. However, most workers (91.5%) knew that yellow bags should not be carried with black bags in the same trolleys inside the hospital.

Regarding correct knowledge of storage of HCW inside the hospital, only 67.9% knew that there should be designated central storage points; 81.6% knew that bags containing waste should not be compressed at the storage point, 91.7% knew that cytotoxic waste should be separated from other types of HCW, and 74.9% knew that yellow and black bags should not be kept together at the storage point. Regarding transport of HCW, only 68.6% knew that it should be transported away from the hospital by special trucks.

The most important cited health consequences of improper HCW management or accident were Hepatitis B (97.8%), Hepatitis C (97.5%), and Acquired Immunodeficiency Syndrome (96%).

Of the total study population, only 23.5% had received previous training on HCW management.

Based on the knowledge questions, the median score of knowledge based on the composite score was 31. This was used to divide health workers into two groups; low knowledge group (below 31), and high knowledge group (31 and above). The low knowledge group included 139 (43.3%), and the high knowledge group included 182 (56.7%). On examining the association between knowledge and other related variables, the proportion of high knowledge was greater among females, nurses, non-Saudis, and those with previous training (Table 2).

– Reported by: Dr. Majed A. Al-Mohaimeed, Dr. Randa M. Nooh (Field Epidemiology Training Program).

Editorial note: HCW poses a serious public health problem. According to a WHO report, around 85% of hospital waste is non-hazardous, 10% is infective (and hence, hazardous) and the remaining 5% is non-infectious but hazardous — whether chemical, pharmaceutical or radioactive.[1] In recent years, medical waste disposal has posed even more difficulties with the appearance and widespread use of disposable needles, syringes, and other similar items. This type of waste has a deleterious effect on the environment by contaminating the land, air, and water resources.

The World health Organization has classified HCW into different categories: infectious, sharps, pathological, pharmaceutical, chemical and radioactive waste.[1,2] Appropriate handing, treatment, and disposal of waste by type reduces cost and does much to protect public health. The cornerstone to effective management of HCW is segregation (separation) and identification of the waste. Segregation of waste is defined as the separation of the two kinds of wastes (hazardous and non-hazardous) while performing the job (providing healthcare services) and not afterwards, by sorting the

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Table 1: Knowledge of health workers at a Riyadh hospital of the classification of each type of waste material:

	Type of waste	Answered Correctly	
		No.	%
Sharps	Needles	309	96.3
	Infusion sets	19	5.9
	Broken glass	294	91.6
Infectious	Patient urine	254	79.1
	Contaminated syringes	214	66.7
	I.V. connecting tube	214	66.7
	Blood	289	90.0
	Equipment coming in contact with infected persons	310	96.6
	Dressing from infected wounds	312	97.2
Chemical	Solvents	214	66.7
	Laboratory reagents	234	72.9
	Expired disinfectants	259	80.7
Pharmaceutical	Drug vials	123	38.3
	Discarded gloves	4	1.2
	Drug bottles with residues	141	43.9
Genotoxic	Out-dated cytotoxic drugs	93	29.0
Domestic	Papers	293	91.3
	Packages	229	71.3

Knowledge and attitude of health workers about GIS and it's application in malaria control.

Geographic Information System (GIS) is a system that involves an organized collection of computer hardware, software, geographical data and personnel, designed to efficiently capture, store, update, manipulate, analyze and display all forms of geographically referenced information.[1]

This study was conducted by the Field Epidemiology Training Program to assess the knowledge and attitude of health workers in Saudi Arabia toward application of GIS in malaria control, using a cross-sectional study design. The study covered different categories of health workers in malaria or Communicable Diseases Control department mainly malarious areas: Jazan, Aseer, Makkah, Al-Baha, Taif, Al-Laith and Al-Qunfudha. It also included health workers in the Communicable Diseases Control department in Riyadh. Participants in the study were physicians, laboratory specialists, health inspectors, parasitologists, and different types of technicians. Data was obtained by using a self administered questionnaire.

The total respondents from 8 regions were 305; most were from Aseer 123, Jazan 62, Al-Laith 32, Al-Baha 26, Taif 20, Riyadh 19, Makkah 13 and Al-Qunfudha 10. Their mean age was 41.8 years (SD ±9.9), and almost 40% were over 45. Saudis comprised 66.2%, Sudanese 15.1%, Egyptians 10.2%, Indians 2.3%, Syrians 2.0%, other 4.3%. Over half worked in the Communicable Disease Control departments of each region 64.9%, followed by primary health administrations 20.3%, malaria centers 8.2% and primary health care centers 6.6%. Their occupations were: Health inspectors 36.7%, technicians 18.7%, nurses 12.5%, physicians 10.2%, laboratory personnel 8.5%, health managers 4.3%, public health specialists 3.6%, and other 5.6%. Educational levels were: up to and including secondary school 27.5%, health diploma 37.7%, university graduate or post graduate 34.8%.

Regarding knowledge of GIS and its application in Malaria control, only 118 (38.7%) used the computer in their work and only 112 (36.7%) had heard of GIS. Out of the 112 who had heard about GIS, 58 (51.8%) heard of it from colleagues, 34 (30.4%) through training courses, 29 (25.9%) from the internet, 10 (8.9%) from TV, 5 (4.5%) by self reading and 2 (1.8%) during the Rift Valley Fever outbreak in Saudi Arabia of year 2000. Of those who had heard of GIS, 80 (71.4%) gave the correct meaning of GIS 'Geographic Information System': all Riyadh and Al-Qunfudha health workers (100%), Al-Baha 88.9%, Makkah 83.3%, Taif 75%, Al-Laith 66.7%, Aseer 62.1%, Jazan 57.1%.

Correct responses for the benefits of GIS in malaria control were: cost effectiveness 72.3%, planning 87.5%, easily obtained information 83%, reliable information 88.4%, and data covering unlimited geographical areas 40.2%. Correct responses for the requirements for application of GIS in malaria control were: computer hardware 83.9%, geographic data 75%, and specific software 69.6%.

Of the 112, 94 (83.9%) responded that GIS could be applied in health; 100 (89.3%) responded that it could be used to map malaria incidence/prevalence and determine its risk factors, of who 70% responded positively to 'Climate conditions like temperature and rain', 79% to 'Control measures', 94% to 'Location of swamps or valleys', 77% to 'Types and distribution of mosquitoes', 82% to' Distribution of cases' and only 69% to 'Population movement'. Factors thought to limit the use of GIS in malaria control are shown in figure 1.

Of 100 health workers who had heard about GPS device, only 25% gave its correct meaning 'Global Positioning System'. However, 66% answered correctly that GPS device is used for allocation of coordinates, 18% for data collection, 9% for data analysis and 7% for data entry. Comparison of knowledge of health workers in different regions about GIS and GPS and whether they had received previous training is shown in table 1.

Out of the 305 health workers in the study, 258 (84.6%) worked in malaria control. Mean working years was 10.8 (SD ±8.7), 92 (30.8%) had worked for < 5 years, 94 (30.8%) 5-15 years, 57 (18.7%) 16-25 years and 15 (4.9%) for > 25 years.

Two hundred thirty-six (77.4%) of the total study participants reported that they usually used geographic information in their work, 221 (72.5%) got this information from

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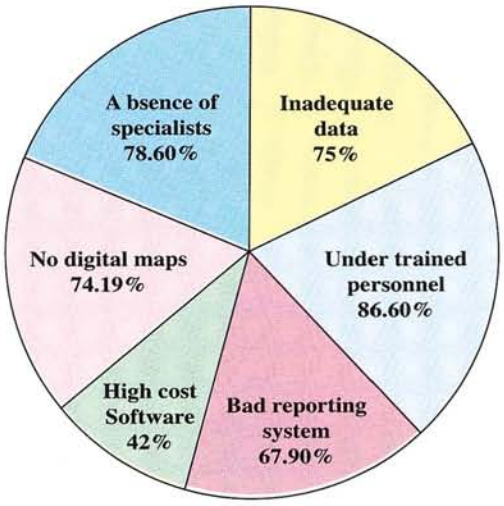
Figure 1: Reported factors that may limit the use of GIS in malaria control in Saudi Arabia. (n=112)



Knowledge and attitude of health workers about GIS and it's application in malaria control, cont...

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field work, 124 (40.7%) from maps and 64 (21%) from other departments. Of the total, 282 (93.1%) wanted to apply GIS in control of malaria in their work area.

– Reported by: Dr. Haleema A. Al-Johar, Dr. Abdullah M. Al-Rabea, Dr. Nasser A. Al Hamdan. (Field Epidemiology Training Program)

Editorial note: Malaria is a life threatening parasitic disease transmitted by mosquitoes. It is still endemic in parts of the southwest of the kingdom. The most basic application of GIS in malaria involves mapping the incidence/prevalence in geographic areas to examine the existence of any obvious pattern, and mapping their relationship with other potential risk factors such as: temperature, rainfall, land use/land cover, elevation, demographics (age and gender), population movement, climate change, breeding sites and control programmes.[1,2] It can be used to investigate associations between environmental variables such as climatic factors, particularly rainfall, temperature and humidity and the distribution of the different species responsible for malaria transmission.[3]

GIS also helps health planners devise specific and targeted methods to control the spread and transmission of malaria.[4] The application of GIS in malaria control has been implemented in several countries, such as Indonesia[2], South Africa[8], and India.[9]

The Global Positioning System (GPS), on the other hand, is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the 1980s, the US government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day.[7]

This study demonstrated deficiency in the knowledge of health workers of all aspects of GIS and its general applications, benefits, requirements, limitations and its application in malaria control. It also showed deficiency in knowledge of health workers regarding GPS devices and their uses for coordinates allocation. GIS is a relatively new technology to Saudi Arabia. However, inadequate data, bad reporting system and difficulty in obtaining the digital maps are factors that may limit the use of GIS in malaria control.

It is also obvious from the study findings the deficiency of training programs of both GIS and GPS, which points to the need for raising awareness of health workers by holding more training courses particularly in areas of high malaria endemicity.

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Table 1: Percentage of health workers who had heard about GIS & GPS in each region.

	Heard about GIS		Had training in GIS		Heard about GPS		Had training in GPS	
Regions	**No.**	**%**	**N**	**%**	**No.**	**%**	**N**	**%**
Aseer (123)	29	23.6	6	4.9	26	21.1	4	3.3
Jazan (62)	35	56.5	11	17.7	43	69.4	11	17.7
Al-Laith (62)	3	9.4	0	0	3	9.4	1	3.1
Al-Baha (32)	9	34.6	4	15.4	3	11.5	2	7.7
Taif (26)	12	60	3	15	5	25	1	5
Riyadh (20)	13	68.4	6	31.6	12	63.2	4	21.1
Makkah (19)	6	46.2	3	23.1	4	30.8	1	7.7
Al-Qunfuda (10)	5	50	1	10	4	40	1	10

Knowledge of health workers at Riyadh Medical Complex of health care waste management, 2004, cont...

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waste into color-coded plastic bags or containers.[1] This should always be the responsibility of the waste producer, should take place where the waste is generated, and should be maintained in storage areas and during transport.[1]

One category of HCW that causes an extreme health risk are namely the sharps (e.g. needles, scalpels, razor blades, glass such as ampoules), which may be contaminated with blood. Many studies emphasize the risk of transmission of HIV and other blood-borne viruses like Hepatitis B through needle-stick injuries.[3] Other problems include the scavenging and re-use practices that occur in some countries, and exposing the populations to health risks.[3]

The Kingdom of Saudi Arabia is also faced with the problem of HCW management, particularly following the rapid expansion of health services in the past two decades. It has been estimated that the mean amount of all healthcare risk waste generated in the Kingdom was 25,207 tons/year. The mean hospital healthcare risk waste rate of generation was 1.13 ± 0.96 kg/bed/day, and that of the primary healthcare centers and clinics was 0.08 ± 0.08 kg/visitor/day.[4]

It is well known that HCW management problems in many countries over the world are usually caused more by lack of information than by financial or technical difficulties.[5] A study in India reported that medical consultants, residents and scientists had respectively, 85%, 81% and 86% knowledge of biomedical waste management regulations. The knowledge component among nurses was 60%.[6]

A previous survey in Saudi Arabia conducted among medical staff of King Fahad Hospital, Al Khobar, for their awareness of the hospital's generation and handling of waste, reported lack of awareness, ignorance of policy and procedure on handling of HCW and failure to attend educational activities as major defects among health care staff in the study.[7]

It is clear from the study findings that knowledge of participant health care workers of HCW management has still not achieved the desired standards. Improving the awareness of health care workers of the HCW management rules implemented in Saudi Arabia, in general, and in their respective hospitals, in particular, is urgently required. Extensive training and retraining programmes should help in changing the attitudes and risk behavior of health care workers for the effective implementation of HCW management in practice. Teaching and demonstration sessions with both the nursing domestic and portering staff are also required.

Table 2: Relation between level of knowledge of health care workers at RMC regarding HCW management and other variables:

		Low knowledge	High knowledge	P-value
Age (years)	Under 30	43 46.7%	49 53.3%	0.620
	30 to 40	46 41.8%	64 58.2%	
	Over 40	35 39.8%	53 60.2%	
Gender	Male	52 57.1%	39 42.9%	0.002
	Female	81 37.5%	135 62.5%	
Occupation	Physician	46 63.0%	27 37.0%	0.000
	Nurse	89 37.2%	150 62.8%	
Department	ER	9 69.2%	4 30.8%	0.107
	Medicine	54 45.8%	64 54.2%	
	Surgery	23 35.9%	41 64.1%	
	Other	26 37.7%	43 62.3%	
Nationality	Saudi	42 63.6%	24 36.4%	0.000
	Non-Saudi	81 36.3%	142 63.7%	
Previous training	Yes	22 30.1%	51 69.9%	0.010
	No	117 47.2%	131 52.8%	

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ملخص باللغة العربية

معرفة العاملين في القطاع الصحي بإحدى مستشفيات الرياض حول إدارة النفايات الطبية.

يشكل التعامل مع النفايات الطبية مشكلة كبيرة ومستمرة في معظم الدول ، وذلك يشمل المملكة العربية السعودية، التي تنتج حوالي ٢٥٢٠٧ طن من النفايات الطبية في السنة. الإدارة المناسبة للنفايات الطبية تحتاج الى عدة خطوات منها فرزها في أماكن الانتاج، تجميعها ونقلها وتخزينها ومعالجتها، و التخلص النهائي منها. لذلك فإن المعرفة الصحيحة للعاملين في المجال الصحى حول خطوات إدارة النفايات الطبية ضرورة ملحة.

قام فريق من برنامج الوبائيات الحقلي بدراسة مقطعية بين الأطباء و الممرضات العاملين بإحدى مستشفيات الرياض لتقييم مستوى معرفتهم بأنواع النفايات الطبية و مكونات إدارة النفايات الطبية. تم توزيع استبيان يتكون من أسئلة عن المعلومات الديموغرافية للمشاركين و معلوماتهم عن الأنواع المختلفة للنفايات الطبية وفرزها وتخزينها ونقلها داخل وخارج المستشفى والتخلص النهائي منها وما إذا كان المشاركون قد تلقوا تدريباً مسبقاً عن إدارة النفايات الطبية. لتقييم المعرفة تم وضع معيار يعتمد على ٤٤ سؤالاً معرفياً، واستخدام الوسيط للمعيار كحد فاصل لتصنيف العاملين إلى مجموعتين: معرفة عالية و معرفة منخفضة.

كان عدد المشاركين بالدراسة ٣٢١ ، متوسط أعمارهم ٣٥,٧ سنة، أكبر مجموعة عمرية بين ٣٠ -٤٠ سنة (٣٧,٧%). كان هناك ٢١٦ أنثى (٧٠,٣%) و ٩١ ذكراً (٢٩,٦%)، منهم ٦٦ سعودي (٢٢,٨%) و ٢٢٣ (٧٧،٢%) غير سعودي. كان هناك ٧٣ طبيبا (٢٣,٤%) و٢٣٩ ممرضة (٧٦,٦%)، منهم ١١٨ (٤٤,٧%) يعملون في قسم الباطنة و ٦٤ (٢٤,٢%) في قسم الجراحة، ١٣ (٤،٩%) في قسم الأسعاف، و٦٩ في أقسام أخرى (٢٦,١%).

كان النقص في المعرفة واضحا بالنسبة لتصنيف أنواع النفايات الطبية ، حيث ان ٥,٩% فقط صنفوا أدوات التروية كنفايات حادة، ٦٦,٧% صنفوا الإبر المستعملة وأنابيب المحاليل كنفايات معدية، ٧٩,١% صنفوا عينات البول كنفايات معدية، ٦٦,٧% صنفوا المنظفات كنفايات كيميائية، و ١,٢% فقط صنفوا القفازات المستعملة كنفايات صيدلانية.

بالنسبة لفرز النفايات الطبية ٧٢,٩% كانوا يعلمون بوجوب فرزها في أماكن إنتاجها، ٧٥,٩% يعلمون أن الطاقم الطبي هو المسئول الأول عن فرز النفايات، ٩٨,١% يعلمون أن النفايات الحادة يجب وضعها في علب بلاستيكية خاصة، و ٩٦,٨% يعلمون بوجوب فرز النفايات الطبية المختلفة في أكياس ملونة خاصة، منهم ٩١,٣% يعلمون أن الأكياس الصفراء تستخدم للنفايات المعدية، ٨٠,٤% الأكياس الحمراء للنفايات الباثولوجية و ٨٣,٨% الأكياس السوداء للنفايات غير الخطرة. ٨٣,٢% كانوا يعلمون بوجوب جمع النفايات الطبية من أماكن إنتاجها على الأقل مره واحدة يومياً.

وحول نقل النفايات الطبية داخل المستشفى، ٣٧,٢% فقط كانوا يعلمون بوجود عربات خاصة تستخدام لهذا الغرض. ٣,٢% فقط كانوا يعلمون بوجوب تخصيص عمال معنيين بمسئولية نقل النفايات داخل المستشفى. بالنسبة لنقل النفايات الطبية خارج المستشفى، ٦٨,٦% فقط كانوا يعلمون بوجوب استخدام شاحنات خاصة لهذا الغرض.

بالنسبة لمعلومات المشاركون عن الأمراض التي يمكن أن تحدث نتيجة حوادث النفايات الطبية حوالي ٩٧,٨% كانوا يعلمون عن العدوى بالإلتهاب الكبدي الفيروسي (ب)، ٩٧,٥% الإلتهاب الكبدي الفيروسي (ج)، و ٩٦% مرض نقص المناعة المكتسب.

٢٢,٧% فقط من المشاركين بالدراسة أفادوا بأنهم تلقوا تدريبا مسبقاً عن إدارة النفايات الطبية.

بالنسبة لتقييم المعرفة تم تقسيم المشاركين إلى مجموعتين: ذات معرفة منخفضة ١٣٩ (٤٣,٣%) وذات معرفة عالية ١٨٢ (٥٦,٧%). كانت المعرفة المرتفعة أكثر بين الإناث (٦٢,٥%) (P=٠,٠٠٢)، و الممرضات (٦٢,٨%) (P =٠,٠٠٠)، وغير السعوديين (٦٣,٧%) (P=٠,٠٠٠)، و الذين قد تلقوا تدريبا مسبقا (٦٩,٩%) (P =٠,٠١).

أوضحت الدراسة أن معرفة العاملين الصحيين حول إدارة النفايات الطبية لا زالت دون المستوى المأمول. يجب أن يكون العاملون في المجال الصحي على دراية بالقوانين والأنظمة لإدارة النفايات الطبية في المملكة العربية السعودية و كذلك الأنظمة المعمول بها في مستشفياتهم. تم التوصية على وضع برامج للتدريب المكثف وإعادة التدريب في ادارة النفايات الطبية لجميع العاملين في المجال الصحي من ممرضين وأطباء وآخرين.

اعداد: د. ماجد المحيميد، د. رنده نوح (برنامج الوبائيات الحقلي)

معرفة وموقف العاملين الصحيين بنظم المعلومات الجغرافية (GIS) وتطبيقه في مجال مكافحة مرض الملاريا بالمملكة.

نظم المعلومات الجغرافية (GIS) يعني بجمع، وإدخال المعلومات الجغرافية (خرائط صور جوية، مرئيات فضائية) والوصفية (أسماء، جداول)، ومعالجتها (تنقيحها من الأخطاء)، تخزينها، واسترجاعها، تحليلها (تحليل مكاني وإحصائي)، وعرضها على شاشة الحاسوب أو على ورق في شكل خرائط تقارير، أو رسومات بيانية. و قد تم تطبيق نظم المعلومات الجغرافية في المملكة العربية السعودية في مجال مكافحة مرض الملاريا في منطقة جازان جنوب المملكة.

قام فريق من برنامج الوبائيات الحقلي بدراسة مقطعية تهدف الى تقييم مدى معرفة وموقف العاملين الصحيين في إدارات مكافحة الأمراض المعدية وخاصة الملاريا لنظام GIS وتطبيقه في مجال مكافحة الملاريا وذلك في مناطق انتشار المرض بالمملكة. شملت الدراسة العاملين الصحيين بمناطق انتشار الملاريا بالمملكة: عسير، جازان، الباحة، العاصمة المقدسة، الليث، القنفذة و الطائف. كما شملت أيضا العاملين في إدارة الأمراض المعدية بمدينة الرياض.

شملت الدراسة ٣٠٥ في ٨ مناطق، معظمهم من منطقة عسير (١٢٣)، ٦٢ من منطقة جازان، ٣٢ من الليث، ٢٦ من منطقة الباحة، ٢٠ من منطقة الطائف، ١٩ من منطقة الرياض، ١٣ من العاصمة المقدسة و ١٠ من القنفذة. بلغ متوسط أعمار المشاركين في الدراسة ٤١,٨ عاما (الانحراف المعياري ٩,٩). معظمهم كانوا من الجنسية السعودية ٢٠٢(٦٦,٢%). بالنسبة للمستوى التعليمي ١١٥ (٣٧,٧%) كانوا يحملون درجة الدبلوم و١٠٦(٣٤,٨%) يحملون شهادات جامعية أو دراسات عليا، ١١٨(٣٨,٧%) كانوا يستخدمون الحاسب الآلي في مجال عملهم بينما ١١٢(٣٦,٧%) فقط كانوا قد سمعوا عن نظام GIS، من هؤلاء ٥١,٨% سمعوا عنه من زملاء العمال، ٣٠,٤% من خلال الدورات التدريبية، ٢٥,٩% من الانترنت، ٨,٩% من التلفزيون، ٤,٥% من خلال القراءة و ١,٨% أثناء فترة تفشي حمى الوادي المتصدع في السعودية. من العاملين ال١١٢ الذين سمعوا بنظام GIS, ٧١,٤% أعطوا الإجابة الصحيحة لمعنى (GIS) "نظام معلومات جغرافية"، ٨٣,٩% أجابوا بأن GISيمكن استخدامه في التطبيقات الصحية. ٨٩,٣% أجابوا بأنه يمكن استخدامه لدراسة معدل انتشار مرض الملاريا أو تحديد عوامل خطورة المرض. الإجابات الصحيحة المتعلقة بفوائد استخدام نظام GISفي مجال مكافحة الملاريا وصلت إلى أكثر من ٧٠%. بالنسبة للمتطلبات الرئيسية لتطبيق نظام GISقد كان أهمها لتوفير أجهزة الحاسوب (٨٣,٩%).

بالنسبة الى جهاز GPS ، أقر ٣٢,٨% فقط من مجموع العاملين الذين شملتهم الدراسة (٣٠٥) بأنهم سمعوا عنه، بينما ٨,٢% منهم فقط تلقوا تدريبا على كيفية استخدامه. من هؤلاء المائة، ٢٥% فقط أعطى إجابة صحيحة لمعنى GPS بأنه " نظام تحديد المواقع العالمي".

من مجموع المشاركين، ٨٤,٦% كانوا يعملون في مجال مكافحة الملاريا. بلغ متوسط سنوات عملهم في هذا المجال ١٠,٨ سنوات (الانحراف المعياري ٨,٧)، منهم ٧٧,٤% يستخدم المعلومات الجغرافية في مجال عمله، ٧٢,٥% يحصل على هذه المعلومات عن طريق العمل الميداني، ٤٠,٧% من الخرائط الورقية و ٢١% من الأقسام الأخرى. أبدى ٩٣,١% من مجموع المشاركين رغبتهم مستقبلاً بالانضمام إلى فريق العمل الذي يقوم بتطبيق هذا النظام في مكافحة الملا ريا في مجال عملهم.

بينت الدراسة قصر معرفة العاملين الصحيين بنظم المعلومات الجغرافية و GPS، كما أظهرت أن عدد قليل منهم قد تلقى تدريبا على كيفية استخدامه، مما يؤكد على الحاجة لعقد مزيد من الدورات التدريبية في نظم المعلومات الجغرافية وتطبيقه في مكافحة مرض الملاريا وخاصة في المناطق التي ينتشر فيها هذا المرض بالمملكة.

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Correspondence

To the Editor:

Reference to your article "Knowledge and Practices of health workers of Cold Chain" by authors Dr Munira Al Zamil et.al. in the issue of Saudi Epidemiology Bulletin of Oct-Dec 2004, volume 11, Number 4. We read your article with great interest. Articles on such topics are very rarely reported in the literature. It was a very brave attempt to write on this particular subject. I congratulate the authors on this bold attempt. Please keep it up. Naturally this subject attracts some comments and we do have few of them:

1. Acceptable range of the refrigerator temperature in which we can store our vaccines in the health center / hospital tertiary level is between 2-8°C (Editor's note), so there was no need to select only one figure (4°C) as a cut off point.
2. By freezer watch indicator if the authors meant [2] freeze watch indicator which is kept in that compartment of the refrigerator where you put DPT, DT, TT or HBV. It will give an irreversible change in the freezer watch indicator if the temperature reached below 0° C for at least one hour and then these vaccines should be destroyed and should not be used again. Freeze watch indicator is not kept in the freezer. We feel it was a misprint.
3. According to the MOH recommendation a paper sheet[1] for recording the expiry dates of the vaccines should be used. We normally use a sheet of paper with a list of refrigerator's content with the batch nos. and expiry dates and attach to the outside of the door of the refrigerator and hence it is very convenient to update. Registers are neither used nor recommended.
4. Only 14.5% of the Governmental health workers in Riyadh had received training in cold chain practices according to the article. It is really very alarming considering that it is a Governmental sector facility. Our experience in Qateef area about the lower quality of cold chain maintenance in private sector is similar to that mentioned in the article. It requires more training, supervision and follow up in that sector. We have a regular program regarding this and are implementing it.
5. In our area we have auto defrost refrigerators in both the private and governmental sectors. It is amazing that in your study, a large percentage (>45% GHF in Riyadh have ice thickness over 5mm in the freezer) is without this option or option not working.
6. I agree with the Editor's note that recommended distance between the wall and the refrigerator should be minimum 15 cm.
7. Now most of the authors believe that at health center level polio should be kept at 2-8°c. At Central and regional level, yes it should be kept frozen in the range of -15 to -25°C.

– From: Dr. Abdul Rauf Ghulam Mohammad. (Incharge of the vaccination department in Primary Health Care Qateef. Eastern Province. Contact Phone no. 03-8520435, E mail: arkullu@yahoo.com), Dr. Hashim Alawi Abul rahi. (Head of the department of Preventive medicine and chief epidemiologist. Primary Health Care Qateef. Eastern Province. Phone No. 03-8541585, E mail: habulrahi@yahoo.com).

Reply from the Author:

In response to their comments, we would like to thank them for reading the article with such interest, and we agree with their comments. The freeze watch indicator is an irreversible temperature indicator that is used to evaluate whether freeze sensitive vaccines have been exposed to freezing. If the freeze indicator is exposed to temperatures below 0°C (±1.5°C) for more than one hour, the indicator paper becomes stained with color. The freeze indicator should be kept above freezing temperatures, therefore it is placed with freeze sensitive vaccines in upright refrigerators.[4]

We regret the typing error for the percentage of Governmental Health Facilities in Riyadh where the ice thickness in the freezer compartments was less than 5mm. which should have appeared as 84.5% rather than 54.5%.

– Dr. Munira Al Zamil (Field Epidemiology Training Program).

References:

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2. WHO. Immunization in Practice; module 3 - The Cold Chain WHO/EPI/TRAM/98.03Rev.1*. WHO Geneva 1998 p9.
3. WHO. Guidelines for the establishing or improving national, regional and district vaccine stores. Global programme for vaccines and immunization. WHO/EPI/96.03 World Health Organization, Geneva l996. p 4.
4. WHO. The cold chain. Equipment performance specifications and test procedures. http://www.who.int/vaccines-access/vacman/temperature /freeze_watchtm.htm

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Inside the Kingdom

November 15-16, 2005: The Genetics of Developmental Disabilities: Diagnosis, Treatment, and Prevention"
Contact: Academic and Training Affairs, CME Section, King Faisal Specialist Hospital and Research Centre, MBC-36. POBox 3354 ‹Riyadh 11211.
Tel. No.: + 966-1-442-7238 Fax: +966-1-442-4153 /+966-1- 442-7237
Email: web_symposia@kfshrc.edu.sa Website: www.kfshrc.edu.sa/symposia

Outside the Kingdom

November 8-13, 2005: 3rd Qatar International Medical Congress.
Contact: Ms. Hanadi, General Secretary, Emergency Department, Hamad Medical Corporation, PO Box 3050, Doha, Qatar.
Phone: +974 4392050/4392177 /4391148. Fax. +974 4392179
E-mail: hali5@hmc.org.qa/qmedcongress@yahoo.com
Website: www.hmcorg.qa/qimc

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Selected notifiable diseases by region, Apr — Jun 2005

	Riyadh	Makkah	Jeddah	Madinah	Taif	Qassim	Eastern	Hasa	Hafr Al-Batin	Asir	Bisha	Tabuk	Hail	Al-Shamal	Jizan	Najran	Baha	Al-Jouf	Goriat	Gonfuda	Total
Measles	12	11	74	3	7	4	1	0	1	0	0	3	0	0	3	2	0	0	0	0	121
Mumps	4	3	1	0	0	0	2	2	2	0	0	3	1	0	0	2	0	0	0	0	20
Rubella	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Varicella	2467	739	1736	630	558	1093	2482	1774	322	1468	174	801	114	330	362	334	582	43	46	280	16335
Meningitis mening.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
Meningitis other	40	7	14	5	21	7	3	4	0	1	0	9	0	0	2	0	0	0	0	1	114
Hepatitis B	198	34	271	86	27	70	129	8	1	53	16	76	9	1	37	1	59	1	3	16	1096
Hepatitis C	174	20	216	38	10	24	79	12	0	18	7	34	6	3	5	0	26	0	0	4	676
Hepatitis unspecified	39	0	13	5	0	0	0	5	0	35	0	49	0	0	152	2	0	0	0	0	300
Hepatitis A	69	70	11	146	3	46	7	22	18	50	4	68	53	27	25	55	3	3	4	1	685
Typhoid & paratyphoid	4	16	0	6	0	0	7	11	1	13	3	4	32	16	11	0	0	0	1	1	126
Amoebic dysentery	4	0	521	13	25	8	36	22	26	52	44	0	24	0	8	2	4	0	3	0	792
Shigellosis	7	0	4	0	0	3	3	3	1	0	0	9	1	0	0	6	2	0	1	0	40
Salmonelosis	107	8	20	6	0	12	99	21	15	8	19	13	3	0	1	9	9	0	3	1	354
Brucellosis	134	2	17	65	100	213	80	24	78	98	61	12	163	34	25	35	3	10	2	3	1159

Comparisons of selected notifiable diseases, Apr - Jun 2004-2005

DISEASE	Apr-Jun 2005	APR-Jun 2004	Change %	Jan-Jun 2005	Jan-Dec 2004	DISEASE	Apr-Jun 2005	Apr-Jun 2004	Change %	Jan-Jun 2005	Jan-Dec 2004
Cholera	5	3	67	6	14	Meningitis mening.	4	2	100	11	10
Diphtheria	3	0	300	7	0	Meningitis other	117	106	10	224	508
Pertussis	3	19	-84	8	64	Hepatitis B	1096	1125	-3	2179	4594
Tetanus,neonat	6	8	-25	12	37	Hepatitis C	676	726	-7	1270	2981
Tetanus,other	3	2	50	6	11	Hepatitis unspecified	300	290	3	788	1260
Poliomyelitis	0	0	0	0	2*	Hepatitis A	685	914	-25	1328	2999
Guillain Barre Syndrome	26	25	4	72	99	Typhoid & paraty-phoid	126	100	26	194	365
Measles	121	864	-86	196	1775	Amoebic dysentery	792	705	12	1500	2696
Mumps	20	66	-70	103	349	Shigellosis	40	69	-42	91	310
Rubella	2	6	-67	3	17	Salmonellosis	354	438	-19	599	1829
Varicella	16335	28295	-42	29879	67451	Brucellosis	1159	1560	-26	2151	5169

* Imported cases

Diseases of low frequency, Apr – Jun 2005

Yellow fever, Plaque, Poliomyelitis, Rabies, Haemolytic Uraemic Syndrome: No Cases
Diphtheria: 3 Cases (Makkah)
Pertussis: 3 Cases (Qassim 2, Makkah)
Neonatal Tetanus: 16 Cases (Makkah 14, Jeddah 2)
Ecchinoccocosis: 3 cases (Eastern 2, Riyadh 1)
Guillian Barre Syndrome : 26 Cases (Riyadh 6, Jeddah 5, Jazan 4, Qassim 3, Madinah 2, Tabuk 2, Eastern 2, Taif 2, Baha 1, Goriat 1)